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ABSTRACT

Few studies have been conducted on nontraditional student attrition in postsecondary vocational educational programs. This lack of attention is due to methodological limitations, lack of priority on data collection in vocational education, and lack of perceived need for research. The conceptual model of student attrition in postsecondary vocational education proposed in this paper is is adapted from other conceptual and theoretical approaches found in studies conducted in two- and four-year postsecondary institutions. The model draws also upon the previous research on traditional students, including Spady's model of the undergraduate dropout process (1971), Tinto's longitudinal model of student persistence (1975), and Pascarella et al.'s model (1983). Other sources include studies that focus on nontraditional students, such as Bean and Metzner's model of nontraditional student attrition in postsecondary education settings and Brown and Kayser's model of educational adjustment. The proposed model includes several new variables. It is developed to account for attrition among different subgroups of nontraditional students. Exogenous factors describing students' backgrounds include disability and outside community agency support received. The model also seeks to examine the interrelationships of disability and disadvantage with external environmental factors. Several concepts described and tested in other models, "institutional commitment" and "social integration," are expanded in this model. (157 references) (YLB)

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FORMULATING A CONCEPTUAL MODEL OF NONTRADITIONAL STUDENT ATTRITION AND PERSISTENCE IN POSTSECONDARY VOCATIONAL EDUCATION PROGRAMS

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INTRODUCTION

Few issues have generated as much interest or concern as the high attrition rates among students in postsecondary education programs. Over the past three decades, many researchers have investigated student attrition and persistence in traditional two- and four-year postsecondary education programs (Astin, 1975; Bean, 1980; Goble, 1957; Halladay & Andrew, 1958; Iffert, 1958; Knoell, 1976; Spady, 1970; Summerskill, 1962; Terenzini & Pascarella, 1977; Tinto, 1975). More recent studies have begun to focus on attrition problems among "nontraditional" postsecondary education students (Bean & Metzner, 1985; Brown & Kayser, 1982; Fetters, 1977; Fox, 1986; Kayser, 1984; Manski & Wise, 1983; Pascarella & Chapman, 1983; Weidman & White, 1985).

As professional and legislative efforts have evolved to assimilate greater numbers of nontraditional students (e.g., disabled, academically and economically disadvantaged) into postsecondary vocational education programs, insufficient attention has been directed to the difficulties many of these students experience in attempting to successfully complete vocational training programs. At the present time, there is a critical need to better understand the problems and challenges these students encounter during their training. Additional information is needed on the organizational, environmental, and personal factors that lessen the probability of nontraditional students having success in completing their vocational programs. Research documenting dropout problems in postsecondary vocational education is limited. To date, vocational educators know very little about who drops out, at what rate, and what factors account for this attrition. Without a better understanding of these problems, vocational educators will be hampered in future efforts to improve student retention and the experience of all students in postsecondary vocational education programs.

Nontraditional students tend to differ from "traditional" students both quantitatively and qualitatively. The term "nontraditional" has been used by other researchers to encompass a broad range of individual characteristics that distinguish these students from the general population attending a postsecondary education program (see Bean & Metzner, 1985; Fox, 1986; Stewart & Rue, 1983; Weidman & White, 1985). For this reason, it is very difficult to develop a single definition of a nontraditional student. For the most part, the term nontraditional is applied to students who, due to their unique situations, individual characteristics, and personal needs, experience additional barriers or difficulties in

successfully completing postsecondary education programs. Researchers have tended to view the nontraditional student as older than the typical student attending a postsecondary education program, academically and/or economically disadvantaged (e.g., high school dropout, welfare recipient, single head of household), racially or ethnically different, in possession of special learning needs (disabled), or non-English speaking. These and other factors commonly distinguish between nontraditional and traditional students in previous studies of student attrition in postsecondary education programs.

LIMITATIONS OF DROPOUT RESEARCH IN VOCATIONAL EDUCATION

Systematic efforts to investigate nontraditional and traditional student attrition in postsecondary vocational education programs have not received sufficient attention. The following factors account for this lack of attention to student attrition.

Methodological Limitations

It is apparent from the lack of available studies that few researchers have taken an active interest in investigating dropout rates in postsecondary vocational education settings. Available studies addressing vocational education dropout rates and related problems have primarily been conducted in the arena of secondary vocational education (Fine & Rosenberg, 1983; Mertens, Seitz, & Cox, 1982; National Center for Educational Statistics [NCES], 1983; Novak & Dougherty, 1979; Peng & Takai, 1983; Sewell, Palmo, & Manni, 1981; Weber, 1986). Many of these studies provide inadequate theoretical models, with insufficient conceptualization of the longitudinal processes that lead individuals to the point of dropping out. Others, commonly referred to as "autopsy studies," are derived from secondary analyses of national data sets such as those provided by the U.S. Census Bureau, the National Center for Educational Statistics (NCES), and the High School and Beyond Study carried out by NCES. These national databases use broad defining characteristics and measures of dropouts. Unfortunately, these global definitions only serve to gloss over important differences among different forms of student attrition. Thus, studies based on these national data sets are inherently limited from the perspective of their insensitivity to the differing qualities and types of student dropout behavior.

Lack of Priority on Data Collection in Vocational Education

For years the federal government attempted to collect uniform information on vocational education program enrollments, expenditures, placement rates, and attrition rates. The federal Vocational Education Data System (VEDS) was instituted for this purpose following the 1976 VEA Amendments. Phelps (1984) reports that significant problems and difficulties associated with VEDS led the Office of Management and Budget to suspend the collection of all VEDS data in 1983 and for some information, including data on disadvantaged and handicapped student enrollment, the suspension began a year earlier. According to Phelps (1984), any insights or conclusions about the federal investment in vocational education since 1983 are based totally on selected observations and professional conjecture. With the 1983 suspension of VEDS, there presently is no national data on secondary or postsecondary vocational education programs or students. This significantly limits researchers interested in comparing results of single or multi-institutional studies with national longitudinal data. One of the only available national sources of data that presently serves as a basis of comparison for studies on two- and four-year postsecondary education programs is the National Longitudinal Survey (U.S. Department of Health, Education, and Welfare [HEW], 1977). This data set (revised in 1980) provides a relatively complete picture of the long-term movement of individuals through the postsecondary education system and provides a reasonably accurate estimate of student attrition patterns.

Lack of Perceived Need for Research

Another factor contributing to the limited research on student attrition and persistence in postsecondary education may be due to the lack of perceived need for such studies. Over the years, postsecondary vocational education programs have successfully competed with colleges and universities in recruiting qualified students. During the 1960s and 1970s, the "baby-boom" generation was passing through the postsecondary educational system. Enrollments were at or beyond capacity in most institutions and the loss of students through voluntary or involuntary withdrawals was not necessarily viewed as a negative by-product of the educational system. Efforts to improve student retention were simply not critical to the day-to-day operations of postsecondary programs during this period. Within the past decade, however, factors that produced large numbers of college

students in earlier decades have been replaced by conditions leading to enrollment declines in many colleges and universities throughout the United States (McNeill & Sullins, 1987). The Carnegie Council on Policy Studies in Higher Education (1980) reported that almost one-third of all postsecondary institutions experienced an enrollment decline in the 1970s, and for the first time in their relatively short history, many community colleges and occupational training programs also experienced enrollment declines. Most recent trends show a gradual increase in postsecondary education enrollments during the past five years. Given these fluctuations in enrollment patterns, renewed interest in reducing student attrition through improved retention strategies is almost universal among postsecondary education programs.

Nontraditional Student Enrollment on the Rise

Throughout the U.S., nontraditional students represent an increasing proportion of undergraduate collegiate student populations and this trend may continue as the number of traditional-age college students decreases (Bean & Metzner, 1985; Carnegie Council, 1980; NCES, 1983). The National Institute of Education (1984) reported that of the twelve million college students enrolled in 1984, over half of the undergraduate students were women, two out of five were over twenty-five years old, and more than forty percent attended college part-time. Other studies also reveal a growing diversity among postsecondary education students in terms of racial and ethnic backgrounds, socioeconomic status (SES), and other characteristics (see Astin 1975; Eckland & Henderson, 1981; Manski & Wise, 1983). While increasing in number, these nontraditional students show a higher rate of attrition from postsecondary education than their traditional counterparts (Astin, 1975; Bean & Metzner, 1985; Fetters, 1977; Peng & Fetters, 1977). Given high rates of student attrition in postsecondary education programs, coupled with increasing diversity in the composition of future student populations, vocational educators will need to improve strategies to maximize the holding power of postsecondary education programs in the decades ahead.

Other demographic trends reveal an increase in the total number of young people with disabilities exiting special education programs nationally. A large number of the adolescents with disabilities who are now in high school are among the first age cohort of students receiving legislatively mandated public education services. Many of these students

have had at least ten years of public education guaranteed by the Education for All Handicapped Children Act (P.L. 94-142), enacted by Congress in 1975. Nationally, about 250,000 to 300,000 youth who receive the benefits of special education programs will exit each year from their programs (Will, 1984). The Minnesota Department of Education (1985) provides an excellent example of the state-level implications of these projections. Today, about 5,750 to 6,000 Minnesota students with handicaps graduate each year. These numbers are significantly up over recent years, when approximately 2,500 students with handicaps exited their special education programs in the early 1980s. Many of these young people will need to access postsecondary vocational training as a means of enhancing their future employability.

Demographic trends are affecting vocational education programs nationwide. For example, the NCES (1983) reported that in 1980-1981, disabled, disadvantaged, and limited-English proficient populations comprised nearly twenty percent of all students enrolled in vocational education. This is a marked increase from the early 1970s when disadvantaged and handicapped students represented less than thirteen percent of vocational education's enrollment. Phelps (1984) notes that, as is the trend with the total vocational education enrollment, a gradual shift to the postsecondary level is occurring. Approximately thirty percent of the special needs enrollment were in postsecondary adult programs in 1980-1981. This data suggests that there is a general trend towards serving increased numbers of nontraditional students in postsecondary vocational education. This should be viewed as positive evidence for the need to promote appropriate programs and services for these individuals (Johnson, Werdin, & Brown, 1988). A fundamental shift in organizational philosophy and practice may, however, be required to meet this challenge. In most cases, this will require more than a simple fine-tuning of existing institutional policies, programs, and practices. A more in-depth understanding as to why students drop out, why they stay, and what appears to make a difference in enhancing their retention are critical questions for researchers and vocational education practitioners.

TOWARD AN IMPROVED MODEL OF STUDENT ATTRITION IN POSTSECONDARY VOCATIONAL EDUCATION

The purpose of this paper is to provide a review and summary of literature concerning student attrition in postsecondary vocational education programs. A conceptual model of student attrition is proposed to stimulate future research. No test of the proposed model is offered in this review. The literature review and conceptual model are based, in large part, on previous investigations conducted by principal researchers on attrition and persistence in a variety of two- and four-year postsecondary education programs (Bean, 1980; Bean & Metzner, 1985; Brown & Kayser, 1982; Kayser, 1984; Pascarella, 1980; Pascarella, Duby, & Iverson, 1983; Spady, 1971; Tinto, 1975). These previous studies have substantially contributed to an improved understanding of the many interactive processes that shape student dropout or persistence behavior. It is argued that organizational efforts designed to enhance the retention of students in postsecondary vocational education programs should be derived from an improved understanding of the interaction between individuals and the educational environment itself. From such an understanding, plausible retention strategies can be derived to potentially reduce student attrition.

DEFINING BASIC TERMS

Dropout and Attrition

The terms "dropout" and "attrition" are used with similar connotation throughout this paper. The most basic definition of dropout is a student who leaves school/college before completing his or her studies (Bean, 1980). This definition is limited, however, and fails to account for other types of student attrition that exist within public education today. Morrow (1986) and Elliott, Voss, and Wendling (1966) offer a much broader definition of dropout. According to these researchers, the term dropout designates a variety of early school leavers: (1) pushouts—undesirable students; (2) disaffiliated—students no longer wishing to be associated with the schools; (3) educational mortalities—students failing to complete a program; (4) capable dropouts—family socialization did not agree with school demands; and (5) stopouts—dropouts who return to school usually within the same academic year.

Hackman and Dysinger (1970) distinguished between three different forms of attrition. The first situation applies to students who are performing satisfactorily in an academic sense, but may have low commitment to either their own goals or to the goals of the institution or program in which they are enrolled. These students may transfer to another educational institution without informing their previous institutions of this change, yet they would still be considered dropouts. In the second case, students may possess relatively high personal goals and commitments to institutions, but are performing poorly in their academic programs. In this situation, these students may persist while expending considerable personal effort and resources until being forced out on the basis of low academic performance. This is viewed as a situation of involuntary withdrawal. In the final case, students may have both low commitments and low performance levels. Attrition is highly likely to occur in these cases because of either involuntary or voluntary withdrawal.

Over the years there have been many applications and uses of the term dropout to describe early school exiting. Table 1 provides a summary of definitions used in selected studies on student attrition. Formulating an adequate definition of dropout, however, represents a significant problem to researchers because students' early departures from postsecondary education programs often take a number of distinct forms (Cope, 1978). Accepting the process of dropping out at face value and inferring that it means a complete severing of students from their academic environments never again to return, is limiting from a research perspective. It is not uncommon, however, for researchers to adopt a global definition of the dropout phenomenon and to analyze and report data based on a narrow definition of the term. Tinto (1975) argues the importance of adopting a definition of student attrition from a differential perspective. He notes that failure to distinguish academic failures from voluntary withdrawals, for instance, has frequently led to seemingly contradictory findings indicating that ability is inversely related to dropout, unrelated to dropout, and directly related to dropout. In other cases, failure to separate permanent dropouts from temporary stopout and/or transfer behaviors has often led institutional and state planners to substantially overestimate dropout rates in public education institutions.

For the purposes of the model proposed later in this paper, a broad definition of dropout is used, which is that a dropout is a student who leaves school before completing his or her program due to a variety of reasons (i.e., permanent voluntary withdrawal, dismissal, temporary stopout, or transfer to another postsecondary education program).

Attrition is defined as the gradual loss of enrollment experienced directly by the postsecondary education institution due to the premature leaving of students.

Retention and Persistence

Retention generally refers to the continued enrollment of students until graduation. Students who remain continuously enrolled until graduation (i.e., persisters) represent a primary category of student retention (Rugg, 1983). Although retention and persistence are complementary in meaning, there are differences which should be noted. Clark (1986) comments that the term persistence implies continued active participation by students in specific educational activities. Retention refers to the holding power of the educational program or sponsoring institution or agency; this term emphasizes the program's role in participant behavior. The broadest definition of persistence, on the other hand, means to hold firmly and steadfastly to some purpose and undertaking despite obstacles (Davies, 1970). Clark (1986) further stresses that persistence emphasizes the behavior of the learners, implying their perseverance and sustained involvement in a program (with completion an expected outcome). It is important to distinguish between retention and persistence in explaining students' behavior and organizational impact on attrition.

EXTENT OF THE DROPOUT PROBLEM IN POSTSECONDARY EDUCATION

Attrition rates of students attending postsecondary education programs across the U.S. have remained relatively stable over the past four to five decades. Since the turn of the century, researchers have reported an overall dropout rate from postsecondary institutions of approximately fifty percent (Astin, 1975; Bean & Metzner, 1985; HEW, 1977; Iffert, 1958; Summerskill, 1962). Rates of retention in two-year postsecondary programs (e.g., community colleges, vocational education) are considerably lower than in four-year institutions (Cope, 1978). According to the U.S. Department of Health, Education, and Welfare (1977), in two-year programs, only thirty percent of the entering students complete their programs within the institution in which they first registered. A relatively large number of students who leave their two-year programs do, however, go on to successfully complete other forms of postsecondary education. In accounting for

TABLE 1
DEFINITION OF STUDENT DROPOUT

Source	Definition
Tinto, 1975	Various attributes and characteristics of the term dropout must be fully addressed by researchers. Present research commonly fails to distinguish dropout resulting from academic failure from that which is the outcome of voluntary withdrawal. Nor is it uncommon to find permanent dropouts placed together with persons whose leaving may be temporary in nature or may lead to transfer to other institutions of higher education.
Rootman, 1972	This researcher introduces the term "voluntary withdrawal" as meaning those who had withdrawn voluntarily without pressure from the organization and would not return.
Spady, 1971	Two different operational definitions for the college dropout include (1) anyone leaving a college at which he or she is registered; and (2) individuals who never receive a degree from the college.
Astin, 1975	Dropout is defined as referring to those persons who fail to obtain college degrees within a specified period of time.
Morrow, 1986	The term "dropout" has been used to designate a variety of early school leavers: (1) pushouts—undesirable students; (2) disaffiliated—students no longer wishing to be associated with the school; (3) educational mortalities—students failing to complete their programs; (4) capable dropouts—family socialization did not agree with school demands; and (5) stopouts—dropouts who return to school, usually within the same academic year.
Bean & Metzner, 1985	A dropout is considered to be any student who enrolls at an institution one semester, but does not enroll the next semester and has not completed his or her formally declared program of study.

differing forms of voluntary and involuntary withdrawal, transfer, and stopout behaviors of students, it is projected that approximately forty-six percent of all two-year college entrants eventually obtain a college degree, be it two- or four-year diplomas (HEW, 1977). Overall, research shows that it is not uncommon for students to voluntarily withdraw or stopout, re-enter the same program at a later time, or transfer to another institution.

Although dropout rates among nontraditional students are notoriously high, research devoted exclusively to documenting dropout rates among nontraditional students is virtually nonexistent. Several researchers have, however, discussed the apparent variability of nontraditional vs. traditional student attrition from postsecondary education programs (Astin, 1975; Eckland & Henderson, 1981; Gosman, Dandridge, Nettles, & Thoeny, 1983; Manski & Wise, 1983; Robinson, 1967; Tinto, 1987). A major source of data on student attrition in postsecondary education is the National Longitudinal Study (NLS) of 1972 (HEW, 1977). The NLS survey contains comparative data on students by sex, race, social status, ability levels, and other factors and characteristics. This data set is useful for contrasting individuals on a limited range of characteristics (e.g., age, sex, race). The NLS data set provides an illustration of the importance of examining student attrition by comparing differences in selected student demographics, SES, and other factors.

Table 2 illustrates patterns of student attrition in four-year postsecondary programs. Male and female attrition rates were found to be relatively similar (45.9% compared to 46.1%), with females more likely to graduate on schedule than males (females 40.3% compared to males 32.3%). Accounting for race, the highest dropout rates were experienced by Hispanics (64.6%) and Blacks (54.5%). Overall, the attrition rate for Hispanic students is twenty percent higher than for white students. Students' social status also contributes to differing attrition rates in postsecondary education. Students in the lowest social status experienced the highest attrition (60.9%), with higher social status students experiencing the least attrition (36.2%). In addition, students in the lowest ability levels were more than twice as likely to drop out as those in the highest ability grouping (71.6% compared to 33.8% respectively). These findings reveal that race, social status, and ability levels are important factors associated with student attrition in postsecondary programs.

Research studies reporting the dropout rates of other student groups (e.g., handicapped, academically and/or economically disadvantaged) were not found in this

review of the literature. For example, even though persons with disabilities represent a relatively large group of potential students, very little is known about their experiences in postsecondary education programs. The NLS of 1972 (HEW, 1977) does not include information on specific disability groups, and VEDS, which once collected information on handicapped and disadvantaged students, is now suspended. Further, state-by-state data on dropout rates of students with disabilities in postsecondary vocational programs is, at best, haphazardly collected and notoriously unreliable. At the present time, little is known or well understood regarding rates of attrition among adults with disabilities attending postsecondary vocational education programs.

PREVIOUS RESEARCH ON STUDENT ATTRITION AND PERSISTENCE IN POSTSECONDARY EDUCATION

A number of researchers have proposed theoretical and conceptual models that attempt to explain student attrition and persistence in postsecondary education programs (Bean, 1980; Brown & Kayser, 1982; Kayser, 1984; Lenning, Beal, & Sauer, 1980; Pascarella et al., 1983; Pascarella & Terenzini, 1977; Rootman, 1972; Spady, 1970, 1971; Tinto, 1975). Postsecondary settings in which these models were applied include two- and four-year institutions, community colleges, and postsecondary vocational education programs. The majority of dropout studies conducted to date have predominantly focused on traditional students in two- and four-year academic programs (Bean, 1980; Pascarella et al., 1983; Rootman, 1972; Spady, 1971; and Tinto, 1975). Several more recent studies have, however, adapted these earlier studies to examine student attrition and persistence among nontraditional students in postsecondary education settings (Bean & Metzner, 1985; Brown & Kayser, 1982; Fetters, 1977; Fox, 1986; Manski & Wise, 1983; Weidman & White, 1985).

Given the limited availability of research on student attrition and persistence in postsecondary vocational education, a brief overview of major studies conducted in selected postsecondary education settings is offered. Several early studies (Spady, 1971; Tinto, 1975) were conducted in two- and four-year residential college and university settings. These researchers investigated student attrition and persistence in relation to institutional academic requirements and students' social integration and assimilation into the college lifestyle. Other studies conducted during the 1970s and 1980s investigated student

TABLE 2
PROPORTION OF DEPARTURE OF COLLEGE ENTRANTS BY SEX, RACE, SOCIAL STATUS, AND ABILITY
(NLS SURVEY OF HIGH SCHOOL CLASS OF 1972)

Groups	Graduation on Schedule *	Departure by Fall 1976
Total	36.1%	46.0%
Sex:		
Males	32.3	45.9
Females	40.3	46.1
Race:		
Blacks	27.5	54.5
Whites	37.8	44.6
Hispanics	13.4	64.6
Others	31.6	47.0
Social Status:		
Lowest quartile	24.4	60.9
Middle quartile	32.2	51.1
Highest quartile	43.7	36.2
Ability:		
Lowest quartile	11.6	71.6
Middle quartile	26.3	53.7
Highest quartile	48.3	33.8

*Including students who dropped out, but returned and received a degree on schedule.

Source: Tinto, 1987, adopted from Table 2.5, p. 27.

dropout behavior in two- and four-year nonresidential programs (e.g., community colleges, private and public colleges and universities). These studies on nonresidential, typically commuter-oriented postsecondary programs (see Chickering, 1974; Fetters, 1977; Fox, 1986; Pascarella & Chapman, 1983; Pascarella et al., 1983; Weidman & White, 1985), underscored the relative importance of student background characteristics and environmental variables in mediating student dropout behavior.

More recently, a body of research has focused on nontraditional students (e.g., older, part-time, disabled, economically disadvantaged) in postsecondary education settings. One of the most comprehensive and thorough conceptualizations of nontraditional student attrition and persistence is offered by Bean and Metzner (1985). In their studies of nontraditional student dropouts, environmental variables external to the educational institution itself are the most influential factors affecting student attrition and persistence behavior.

Several researchers have also addressed the educational adjustment of students in postsecondary vocational education programs (Brown & Kayser, 1982; Kayser, 1984; Schwartz, 1989; Mertens, McElwain, Garcia, & Whitmore, 1980). These studies, in particular Brown and Kayser (1982) and Kayser (1984), explored important relationships between student and institutional variables that affect educational adjustment among nontraditional learners.

Presented in this review are studies regarded as most influential in advancing explanatory models of student attrition and persistence in postsecondary education programs. Due to the lack of available research on student attrition in postsecondary vocational education settings, several conceptual models tested by researchers in two- and four-year colleges and universities are described. The proposed model draws from these previous studies in an attempt to develop a schema for exploring nontraditional student dropout and persistence behavior in postsecondary vocational education programs.

Spady's Model of the Undergraduate Dropout Process

Spady (1971) has been one of the most prominent researchers on student attrition in college and university settings. Spady's model, presented in Figure 1, represents a synthesis and extension of concepts on social integration advanced by Durkheim (1951), and research on college dropouts conducted during the 1960s. Spady's model assumes that students' decisions to leave postsecondary education environments are the result of complex social processes that include family background, previous educational history, academic potential, normative congruence, friendship support, intellectual development, grade performance, social integration, satisfaction, and institutional commitment. Both intrinsic and extrinsic rewards are identified in the model as dominant factors in explaining student attrition.

It was Durkheim (1951) who initially postulated that successful assimilation of students into college environments is fundamentally a process of social integration. Social integration is facilitated when moral consciousness is reinforced by intense patterns of affiliation with others who share similar sentiments. Thus, concepts such as "normative congruence" and "friendship support" intrinsically motivate individuals toward high degrees of social integration within educational environments. The primary intrinsic rewards in this model include social integration, satisfaction, and institutional commitment. These intrinsic rewards are primarily associated with interpersonal relationships and intellectual development. Spady (1971) argues, however, that full integration into the college environment depends on successfully meeting the demands of the college's social as well as academic systems.

Extrinsic performance criteria (e.g., grades) are also a reality of academic life. When rewards available within social or academic systems are insufficient to students, attrition may result. Spady (1971) hypothesizes that the decision to withdraw from college is directly influenced by individuals' commitment to the institutions, typically indicated by their grade performance. Institutional commitment, then, is heightened by students' feelings of satisfaction derived from participation in the educational environment and the level of social integration they experience. Academic performance, however, also influences student satisfaction levels. Thus, the interplay between academic and social integration is central to Spady's model.

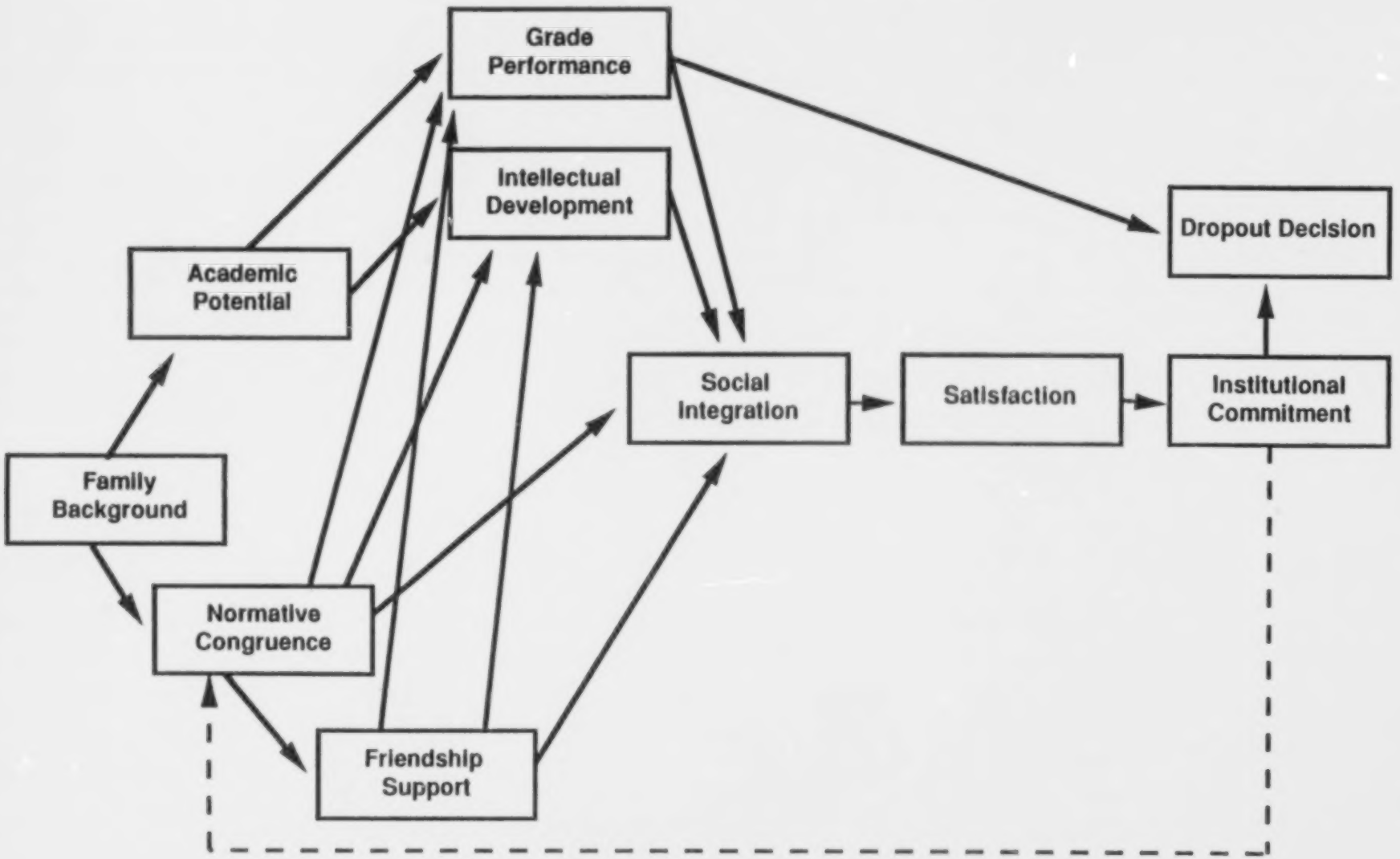

Figure 1 A theoretically based model of the undergraduate dropout process (Spady, 1971).

To test the model, Spady (1971) conducted a longitudinal study of 683 first-year students enrolled at the University of Chicago in 1965. Variables of interest in this study included (1) family background, (2) academic potential, (3) normative congruence, (4) friendship support, (5) grade performance, (6) intellectual development, (7) social integration, (8) satisfaction, (9) institutional commitment, and (10) dropout decision or status (see also Figure 1).

Overall, social integration, grade performance, and intellectual development were reported to be directly related to student attrition or persistence. Over the four-year period of the study, formal academic performance was found to be the dominant factor in accounting for student attrition. Significant differences were found between men and women to the extent to which academic and social integration determined attrition or persistence. The primary extrinsic reward, grades, was the most important determinant of satisfaction and overall retention of males in the study. For women, social integration was the strongest predictor of retention. In other words, the intrinsic rewards symbolized by high social integration and intellectual development are more important in characterizing the overall satisfaction of women than are the extrinsic rewards embodied in the formal evaluation of their academic work (Spady, 1971). For men, however, the extrinsic rewards outweigh the intrinsic in importance.

This model identifies the importance of efforts to explain the influences of intrinsic and extrinsic rewards on student attrition in postsecondary education programs. While Spady's model is useful, it is difficult to generalize the full model to studies of attrition in postsecondary vocational education programs. First, Spady's study was undertaken in a highly selective institution where entering college students were selected on the basis of high demonstrated ability in their high school programs. Two-thirds had attended schools that sent over fifty percent of their graduates to four-year colleges and universities, and over a third ranked in the upper two percent of their graduating class. Students in postsecondary vocational programs typically are much more diverse in their abilities and are academically more heterogeneous than homogeneous as a group.

Second, Spady's notion of "institutional commitment" is relatively narrow. The model assumes that students themselves make a commitment to the institution based on the academic performance and social situation they experience. Equally important, yet not included in Spady's model, is an institution's commitment to its students. During the 1970s and 1980s considerable professional and legislative attention was directed to the

important role postsecondary institutions must assume in affording students meaningful opportunities to achieve educational goals. Equal access, equity, and reasonable accommodation are bywords of recent federal legislation and professional advocacy movements. In developing comprehensive models to explain student attrition in postsecondary education settings today, important concepts such as institutional commitment must be broadened to factor in how postsecondary programs administratively and programmatically commit to their students as well.

The general merits of Spady's model, however, include (1) formulation of an explanatory model of student attrition based upon theoretical frameworks, (2) conception of the interrelatedness of intrinsic and extrinsic rewards and performance criteria on student attrition, and (3) advancement of the concept that successful assimilation into college life is shaped by a complex range of extra- and intra-institutional experiences and factors. These have become important principles in studies on student attrition which have been adopted, in part, by other researchers in subsequent studies.

Tinto's Longitudinal Model of Student Persistence

Perhaps the most well-known and tested model developed to date is Tinto's (1975) longitudinal model of student attrition and persistence. Tinto's model builds on the previous work of Spady (1971), adapting his general concept of social integration, the importance of academic performance and personal background factors, and the general notion of institutional commitment. Tinto's model is similar to Spady's in postulating that lack of integration into the social systems of colleges will lead to low commitment to the social system and will increase the probability that individuals will decide to leave college and pursue alternative activities. Tinto's model is depicted in Figure 2.

Tinto (1975) argues, however, that student departure from college should be viewed as a longitudinal process comprised of interactions between individuals and the academic and social systems of colleges. Subsequently, students' experiences in these systems (as measured by their normative and structural integration) continually modify individual goals and institutional commitments in ways which lead to persistence and/or to varying approaches to dropping out of school. In his explanation of his model, Tinto suggests that individuals enter postsecondary programs with a variety of personal attributes (e.g., sex,

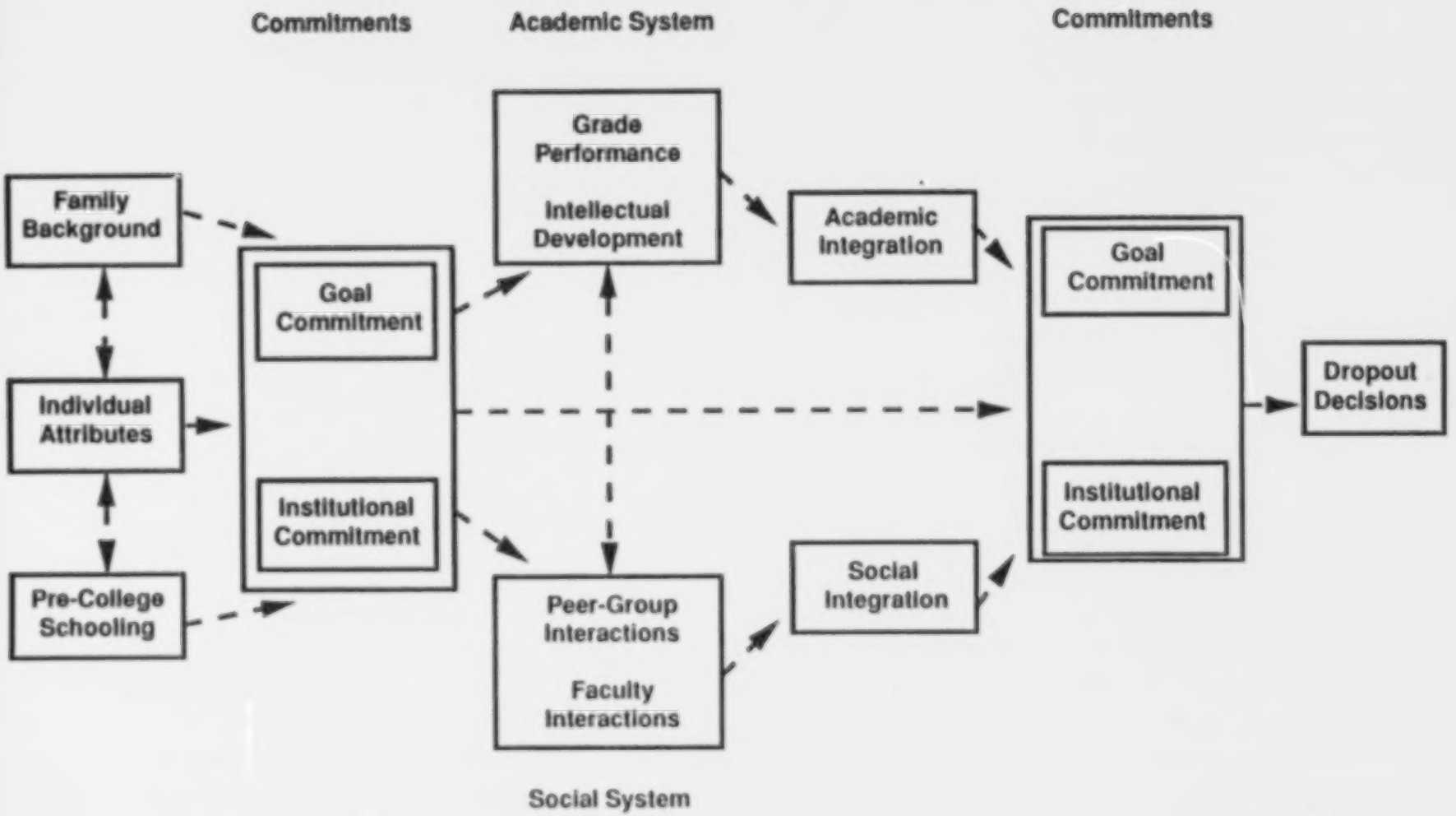

Figure 2 A conceptual schema for dropout from college (Tinto, 1975).

race, abilities), pre-college experiences (e.g., high school academic and social attainments), and family backgrounds (e.g., social and economic status attributes), each of which has direct and indirect impacts upon their performance within a postsecondary setting. Further, postsecondary students' background characteristics and personal attributes also influence the development of educational expectations and commitments. It is these goals and institutional commitments that are both important predictors and reflections of students' experiences, disappointments, and satisfactions in their collegiate environments. Thus, individual characteristics, prior experiences, goals, and institutional commitments most affect the academic and social integration that directly influences students' decisions to remain or withdraw from postsecondary environments. The concept of normative congruence (see Spady, 1971) is also a useful tool for understanding Tinto's views on the process of student attrition.

Tinto's model explores the interplay of five sets of variables and their effect on students' persistence or dropout behaviors. These variables include (1) individual characteristics (e.g., family background, ability levels, sex, age, and past educational experiences); (2) initial commitments (e.g., commitment to the goal of completion vis-a-vis cost-benefit analysis of personal career plans and commitment to the institution as a viable entity for attainment of future career); (3) academic integration (e.g., extrinsic rewards such as grades, grade point average, and faculty interactions on student performance); (4) social integration (e.g., intrinsic rewards such as interpersonal relationships and intellectual development); and (5) subsequent goals and institutional commitments (e.g., peer group associations, extracurricular activities, and faculty interactions).

These variables are also derived from and are consistent with previous studies focused on the importance of evaluating (1) individual characteristics across a broad range of demographic, socioeconomic, and family variables (Astin, 1975; Blanchfield, 1971; Lavin, 1965; Sewell & Shah, 1967; Smith, 1971; Spady, 1970, 1971; Taylor & Hanson, 1970); (2) initial goal and institutional commitments (Bucklin & Bucklin, 1970; Krebs & Liberty, 1971; Spady, 1970); (3) theoretical perspectives on academic and social integration (Astin, 1972; Bayer, 1968; Blanchfield, 1971; Centra & Rock, 1971; Daniel, 1963; Durkheim, 1951; Flacks, 1963; Gamson, 1966; Rootman, 1972; Rose & Elton, 1966; Sarnoff & Raphael, 1955; Spady, 1970, 1971; Vreeland & Bidwell, 1966); and (4) characteristics of academic environments (Astin, 1972; Kamens, 1971; Meyer, 1970; Rock, Centra, & Linn, 1970).

A number of studies have been recently conducted to test the validity of Tinto's (1975) longitudinal model of dropout (see Fox, 1986; Garrison, 1985; Munro, 1981; Pascarella & Chapman, 1983; Pascarella et al., 1983; Pascarella & Terenzini, 1977, 1980, 1983; and Weidman & White, 1985). A full description of these tests of Tinto's longitudinal model go beyond the present discussion. Researchers have investigated the applicability of Tinto's model from the perspective of different academic settings (residential and nonresidential colleges; two- and four-year programs) and on different student populations (nontraditional and traditional), using a range of multivariate and path-analytic procedures for data analysis and interpretation. One of these studies (Pascarella et al., 1983) is discussed next as it represents an important departure from previous investigations.

Research in Nonresidential Postsecondary Settings

Pascarella et al. (1983) departed from previous research on postsecondary education programs by applying Tinto's model to a nonresidential commuter-oriented college environment. These researchers posited that factors influencing student attrition found in the validation of Tinto's model at a residential institution would not generalize to nonresidential, commuter-oriented institutions. This is principally due to the general understanding that commuter students are less likely than students living on a college campus to be involved in the cultural and intellectual life of the postsecondary institution. Conversely, the influence of pre-enrollment traits on attrition should become more pronounced in nonresidential settings, factors that were not tested with a nonresidential sample in Tinto's or in earlier models.

Pascarella et al.'s (1983) model, presented in Figure 3, is designed to be more applicable to studies of student attrition in postsecondary institutions where students typically live off-campus. Students attending postsecondary vocational education programs, for example, usually reside off-campus while attending school. There is a tendency, as explained by these researchers, for students in nonresidential settings to be less involved in the social system of their academic environments. Their model retains the primary theoretical concepts used by Tinto and includes variables such as background characteristics, social and academic integration, and goal and institutional commitments.

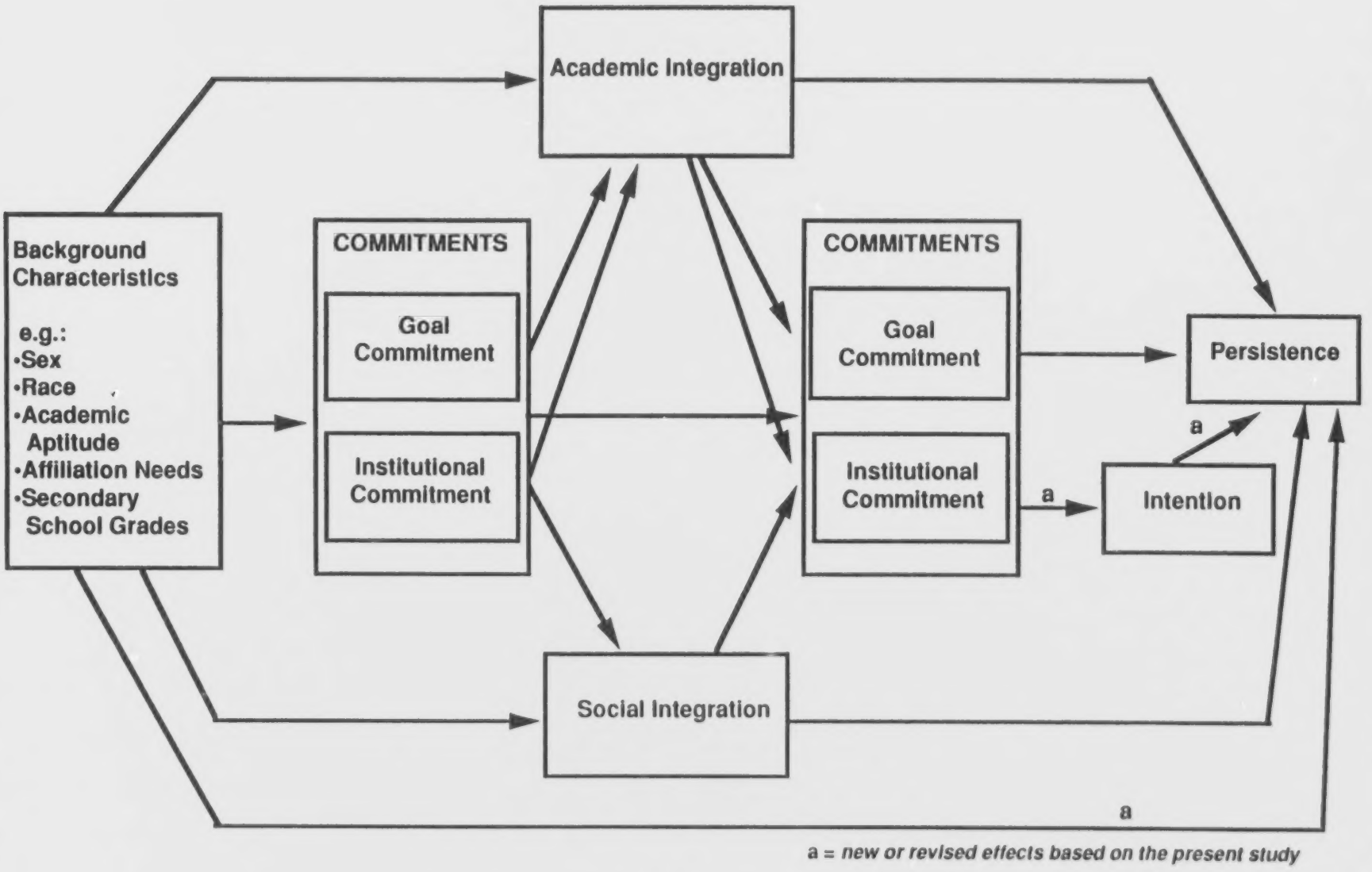

Figure 3 Reconceptualization of Tinto's (1975) model of dropout from college (Pascarella, Duby, & Iverson, 1983).

The major difference noted in the Pascarella et al. (1983) model is that while academic integration has a direct and positive influence on persistence, social integration plays a less significant role (and is even negatively associated) with student attrition. Tinto's (1975) model provided for equal treatment of academic and social integration influences on student attrition. In fact, Tinto has argued that social integration plays a dominant role in processes which intrinsically motivate individuals to remain in college. Tinto maintained that the development of strong interpersonal relationships, participation in extracurricular activities, and informal involvements with faculty serve as strong mediators in decisions to persist in or drop out of programs.

Other intervening variables, however, appear to affect student behavior in nonresidential, commuter-oriented institutional settings. First, students who live off-campus and travel to and from their academic program, simply have less time to engage in socializing activities of the institution. Therefore, the value and importance placed on social integration by these students is typically lower than for students living on-campus. Second, nonresidential students have other types of external demands and commitments. These demands may include additional child care responsibilities, full- or part-time work, and other involvements with family and peers. These additional outside demands and commitments tend to leave less time for students to develop strong social ties within their academic environments.

Pascarella et al. (1983) also introduced the concept of "intention" in their model. This concept has been an important contribution in subsequent studies of student attrition. They found, for example, that intent to continue at an institution was the strongest variable in predicting student dropout or persistence decisions. The results of this study also revealed that academic integration was more important than social integration in explaining dropout behavior in nonresidential commuter-oriented institutions. Student attrition and persistence in commuter institutions were also found to be more strongly influenced by students' background traits, while background traits in residential institutions were more likely to be mediated by the experiences of their schools. These researchers concluded that while Tinto's model provides a useful framework for understanding the longitudinal process of student attrition in residential settings, the degree of influence of several variables in the model may vary substantially when the model is used to explain student attrition behaviors in other types of institutions.

Research on Nontraditional Students in Postsecondary Education

Bean and Metzner (1985) proposed a conceptual model of nontraditional student attrition in postsecondary education settings. Their model builds upon the previous work of Bean (1980, 1982, 1985) and retains several previously identified constructs and variables such as social integration, academic variables, student background, and personal characteristics tested by previous researchers (Pascarella et al., 1983; Pascarella & Terenzini, 1977; Spady, 1970, 1971; Tinto, 1975). Bean and Metzner (1985) de-emphasize the concept of social integration (see Spady, 1970; Tinto, 1975) and the overall socializing importance of college environments on the attrition process. Personal background and outside environmental variables are stressed as major factors affecting student dropout and persistence decisions. Figure 4 depicts their model of nontraditional student attrition.

The conceptual model proposed by Bean and Metzner (1985) includes interaction effects among seven clusters of variables: (1) student background, (2) academic, (3) environmental, (4) social interaction, (5) academic outcomes and GPA, (6) psychological outcomes, and (7) intent to leave. In the model, environmental variables are presumed to be more important than academic variables in predicting nontraditional students' attrition and persistence. For example, if students cannot make adequate child care arrangements, adjust their work schedules, or pay for college expenses, they will not continue in school regardless of the availability of good academic support. However, students who are encouraged to remain in school by family members and others will probably tend to do so despite academic uncertainties. These researchers contend that for nontraditional students environmental support compensates for weak academic support, but academic support will not compensate for weak environmental support. This identification of the importance of environmental criteria as mediating factors represents an important contribution to understanding attrition.

Bean and Metzner (1985) assert that students' decisions to abort or continue their education are influenced by their perceptions about (1) the usefulness (utility) of their college education in terms of improved future employment opportunities and personal growth and development, (2) the degree to which students enjoy being students and are not bored with academic courses (satisfaction), (3) the amount of personal importance students ascribe to attaining a college education and graduating (goal commitment), and (4) the extent to which students experience high levels of stress from college and noncollege

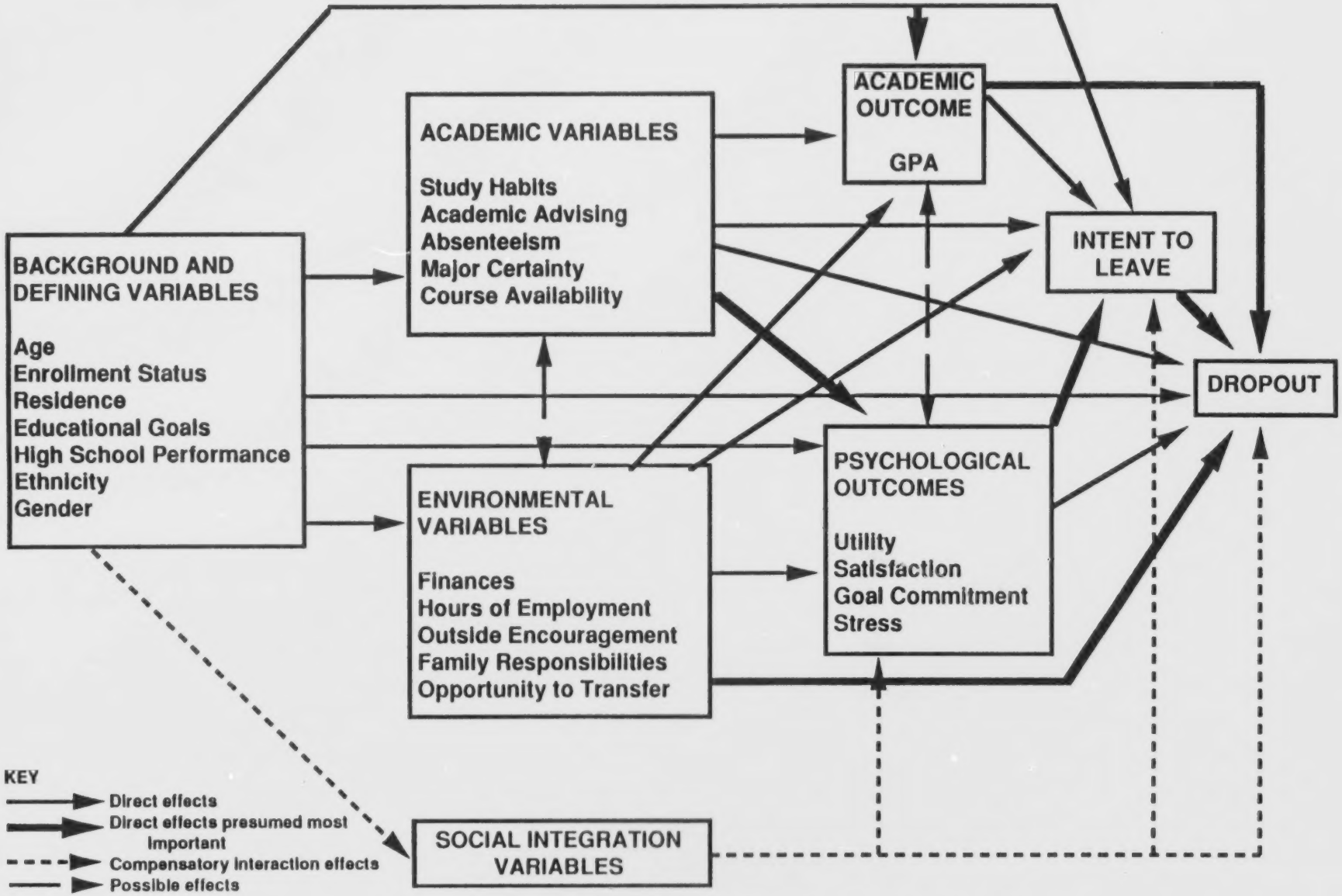

Figure 4 Nontraditional student attrition (Bean & Metzner, 1985).

activities. Overall, if students' perceptions remain highly positive about factors such as utility, satisfaction, and goal commitment and if low stress is experienced, the best possible psychological conditions for persistence are met. These nonacademic factors can even compensate for low levels of academic success.

This model of student attrition provides a useful framework for understanding the interrelationships between students' background characteristics and outside environmental factors on academic performance and dropout and persistence decisions. A number of other studies have investigated nontraditional students in postsecondary education programs and stressed the importance of measuring the impact of external environmental factors, family background, and student characteristics on student attrition and persistence (Brown & Kayser, 1982; Fox, 1986; Garrison, 1985; Kayser, 1984; Weidman & White, 1985).

Research on Nontraditional Students in Postsecondary Vocational Education

A model of educational adjustment has been developed to explain nontraditional student retention in postsecondary vocational education programs (Brown & Kayser, 1982; Kayser, 1984). The nontraditional learner in this schema is classified as an individual who has difficulty successfully achieving any or all of the required objectives in postsecondary vocational education programs. These individuals may require a variety of educational interventions and support systems in order to successfully complete vocational training programs. Here, as in previous studies, the interaction between students and their educational environments is the focus of investigation. Figure 5 illustrates the conceptual model of educational adjustment.

The model of educational adjustment proposed by Brown and Kayser closely relates to the earlier concepts developed by Dawis, England, and Lofquist (1964); Dawis, Lofquist, and Weiss (1968); and Lofquist and Dawis (1969). During the 1960s, these researchers evolved the "theory of work adjustment," based upon interactions between workers and their work environments. This theory postulates that workers' "satisfaction" with their work environments and employers' belief that employees are performing acceptably on the job ("satisfactoriness") results in a condition referred to as "work adjustment." The concept of work personality is central to the theory of work adjustment.

According to Dawis, Lofquist, and Weiss (1968), work personality is composed of (1) skills workers possess in relation to a particular work environment and (2) the psychological needs of the individuals, which are the reinforcers individuals seek from work environments. Skills required for different occupations many times include varying levels of numerical and verbal abilities and aptitudes. Work reinforcers (need satisfiers), on the other hand, are associated with the need of workers to feel a sense of accomplishment, the need for prestige, and/or the need for positive working conditions (Kayser, 1984).

The theory of work adjustment views the work environment from a psychological perspective, primarily through its rewards and reinforcing components. Thus, work environments tend to require specific skills, and, in turn, provide certain rewards and reinforcements to individual workers that are inherent in particular tasks and work settings. Dawis, Lofquist, and Weiss (1968) suggest that acceptable levels of correspondence or congruence (person-environment fit) must be achieved between workers' perceived satisfactions with their work environments and employers' views of those workers' corresponding performance within the work setting.

In Brown and Kayser's (1982) model, three distinct sets of variables are thought to influence educational adjustment levels: (1) background characteristics and student demographics, (2) satisfaction variables, and (3) satisfactoriness or performance variables. As illustrated in Figure 5, students' background characteristics appear to have an influence on both student satisfaction and satisfactoriness. (Satisfactoriness is used as a term to describe an institution's view of student performance.)

According to Brown and Kayser (1982), educational adjustment is the degree of correspondence (congruence) between students' perceived satisfaction with and actual satisfactoriness (performance) in their training programs. This general principle is similar to previously discussed concepts of person-environment fit and normative congruence introduced by other researchers on student attrition (Biddle & Thomas, 1966; Davie, 1958; Goslin, 1969; Rootman, 1972; Spady, 1971; Tinto, 1975). Levels of correspondence are contrasted with educational outcomes to determine students' levels of educational adjustment. Within this framework, the possible combination of student ratings are scored: high-high, high-low, low-high and low-low. A student with a high-high rating would be assumed to be considered adjusted in the person-environment fit sense (Kayser, 1984). Persons in that group would have the greatest chance of completing their programs, all

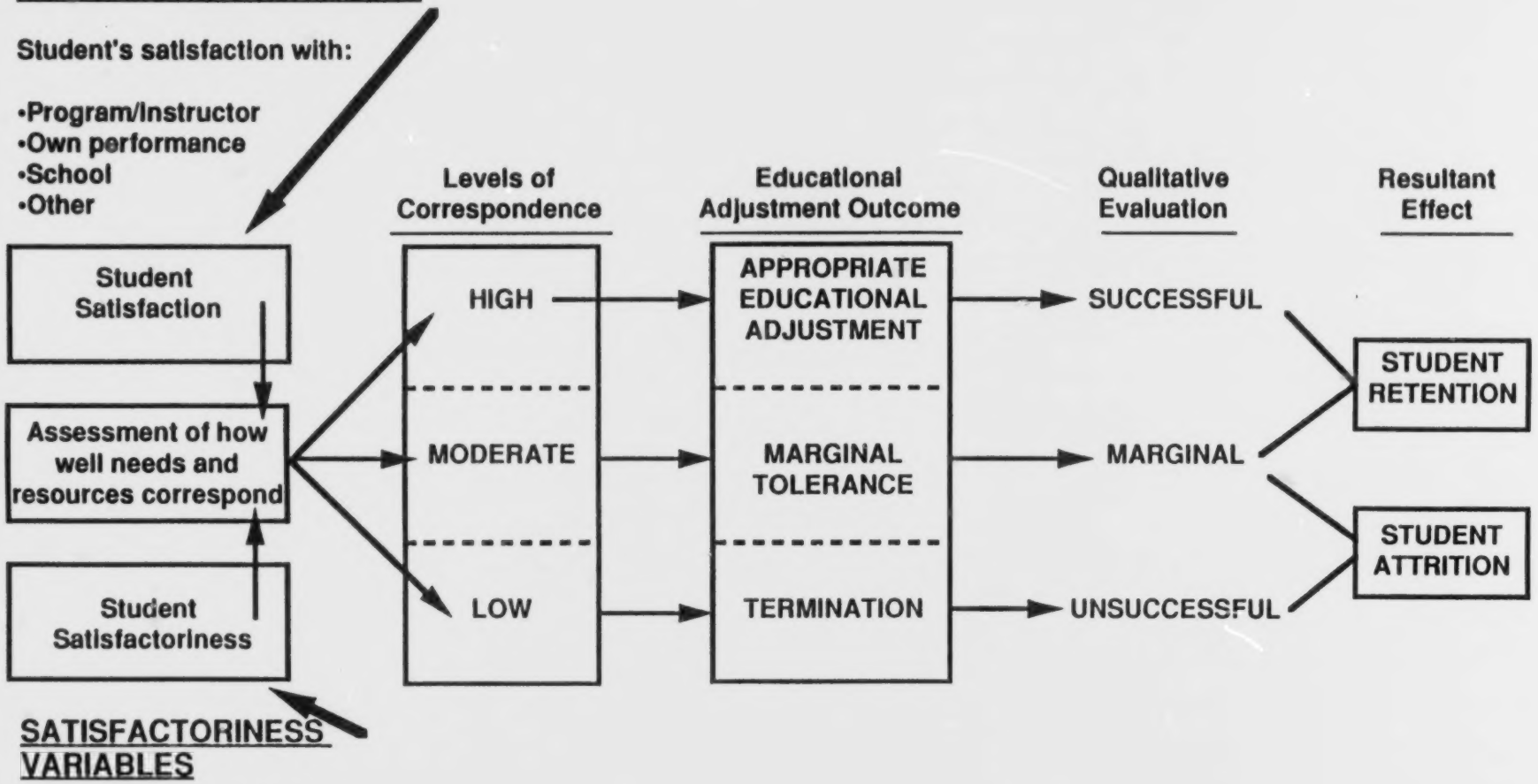

Figure 5 Model of theory of educational adjustment (Brown & Kayser, 1982).

other things being equal. In addition, educational adjustment is viewed as a dynamic construct that seeks movement toward a higher level the longer the person remains in the environment. On the other end of this continuum, students with low-low ratings would appear to be likely candidates to drop out or to be terminated. That is, students with extreme deficiencies on the satisfactoriness scale are more likely to terminate or be counseled out of the program, and students who failed to achieve adequate levels of satisfaction may opt to withdraw from the program voluntarily. Marginal correspondence conditions are the result of one factor being rated as high while the other is rated as low, or where both satisfaction and satisfactoriness factors are rated as being marginal. It is conceivable that a large percentage of students fall into this category, but most of them are capable of completing their programs (Kayser, 1984). As students proceed through their programs, some may move into the high or low correspondence range, depending on their interactions with the educational environment.

Summary and Implications of Previous Models of Student Attrition

This review found relatively few studies explicitly focusing on student attrition and persistence in postsecondary vocational education programs. Exceptions include Abshire (1972); Goldstein (1977); Goodman (1976); Mertens, McElwain, Garcia, and Whitmore (1980); Michlein (1976); Parker (1978); Terry (1973); Timmons (1977); and Womack (1977). To date, the major contributions to our understanding of student attrition in postsecondary education programs have evolved from studies of two-year community colleges and four-year college and university settings (Bean, 1980, 1985; Munro, 1981; Pascarella & Chapman, 1983; Pascarella et al., 1983; Pascarella & Terenzini, 1977, 1983; Spady, 1971; Tinto, 1975). Generalizing findings from studies on two- and four-year college and university settings to postsecondary vocational education environments is problematic. Postsecondary vocational education environments differ in a number of ways from community college and university contexts. The principal difference is in vocational education's orientation toward job-specific training, typically offered without a general education or liberal arts foundation. In addition, postsecondary vocational education courses of study are often less than two years in length (some are six months or less), and some are competency based rather than credit driven. These differences in academic orientation, program length, and structure distinctly set apart postsecondary vocational education environments from other two- and four-year educational programs.

Several studies do, however, describe institutional patterns and student populations somewhat characteristic of those found in postsecondary vocational education. For example, studies on attrition among nontraditional students (Bean & Metzner, 1985; Eckland & Henderson, 1981; Fox, 1986; Peng & Fetters, 1978; Weidman & White, 1985); nonresidential, commuter oriented two-year institutions (Chickering & Kuper, 1971; Gusfield, Kronus, & Mark, 1970; Lackey, 1977; Nelson, 1982; Ward & Kurz, 1969); and differences between full-time and part-time students (Costa, 1984; Fox, 1986; Greer, 1980; Knoell, 1976; Peng & Fetters, 1978; Weidman & White, 1985) offer several parallel student and organizational characteristics common to postsecondary vocational education environments.

There is also a potential problem resulting from confounding research variables when nontraditional and traditional students are aggregated in studies. Many studies fail to account for differences among subtypes of students in terms of age, sex, ethnicity, SES, numbers of dependents, and other factors. Bean and Metzner (1985) suggest that separate analyses should be conducted for large groups of students such as part-time or older students (see Capoor & Eagle, 1977; Stewart & Rue, 1983; Tinto, 1982). Bean and Metzner (1985) also recommend that interaction effects based on student type should be estimated when small subgroup size does not allow for disaggregation. Studies that have attempted to control for interaction effects related to student type include Fox (1986), who limited his study to nontraditional students classified as economically disadvantaged, and Weidman & White (1985), who examined population samples primarily consisting of minority women receiving government welfare subsidies during their training programs. Subtype analysis is an important, but often overlooked data analysis procedure in most studies. Given reports of increased cultural and ethnic diversity of student enrollment, more participation of older students, increased numbers of part-time enrollees, and improved access for adults with disabilities, greater attention must be directed to evaluating their individual as well as collective experience as subgroups in postsecondary education programs.

Overall, research on student attrition and persistence in postsecondary vocational education settings have been few in number, atheoretical, predominantly conducted in single institutional settings, focused primarily on traditional students in specific occupational training programs (e.g., agriculture, home economics, and nursing), and lacking in explanatory quality and power due to insufficient statistical treatment and data

analyses. Simply stated, there is little empirical evidence describing who drops out of postsecondary vocational education programs, why they drop out, or what factors—personal, environmental, academic, and/or social—account for this attrition. Researchers, however, stress the importance of modifying existing models to reflect varying student groups in different types of institutions (Bean, 1985; Bean & Metzner, 1985; Pascarella & Chapman, 1983; Pascarella et al., 1983). Based on the strengths as well as shortcomings of previous research, a model of nontraditional student attrition and persistence in postsecondary vocational education programs is presented next.

A PROPOSED MODEL OF NONTRADITIONAL STUDENT ATTRITION AND RETENTION IN POSTSECONDARY VOCATIONAL EDUCATION

The proposed model of nontraditional student attrition and retention in postsecondary vocational education is presented in Figure 6. As illustrated in the model, student attrition and retention are influenced by four primary sets of variables. The first set of variables contains "background characteristics" related to students' demographic, educational, social, and family history. The second set, "social/psychological integration," includes students' goal commitments; perceptions about the utility of vocational training programs for achieving future employment goals; affective measures of student alienation, self-esteem, and stress; and factors that focus on the nature of interpersonal relationships with peers and instructors. The interactions of these variables produce psychological outcomes that are measured by the "student satisfaction" construct. The third set of variables describes "academic/institutional integration." Academic integration variables include grade performance and GPA; academic, social, and physical capacities of the individual; and such conditions/influences within institutions as program policies, instructors, student support services, schedules, and training programs that affect students' institutional integration. The interactions of academic and institutional integration variables produce "student satisfactoriness" outcomes during participation in vocational training programs. Finally, environmentally based "mediating factors" are postulated to have significant and direct effects on students' dropout and retention decisions. These variables include students' finances, hours of outside employment, family and peer encouragement, peer relationships, family responsibilities, and other community service agency

involvement. These environmental variables influence the degree of social/psychological integration and academic/institutional integration experienced by students. The variables subsequently enhance or inhibit psychological and academic outcomes that ultimately influence students' decisions to drop out or persist.

Student satisfaction and satisfactoriness are considered to be primary conditions that directly affect educational adjustment levels (see Brown & Kayser, 1982; Kayser, 1984). In the model, the degree of correspondence (normative congruence) between students' satisfaction and satisfactoriness determines successful or unsuccessful student persistence. When the level of correspondence between student satisfaction and satisfactoriness is high, the optimum level of student motivation is present, and successful persistence should result. Attrition, however, will more likely result when the level of congruence is low on both constructs. In such situations, student motivation is so inhibited or diminished that participation is neither intrinsically nor extrinsically rewarding. Marginal persistence results from one factor's being rated high while the other is rated low, or where both satisfaction and satisfactoriness factors are rated as marginal (Kayser, 1984). As noted earlier, most "moderate persisters" are considered to be fully capable of successfully completing their programs.

The proposed model includes several concepts and variables included in the previously discussed studies. For example, previous studies (e.g., Bean & Metzner, 1985; Pascarella et al., 1983; Spady, 1970, 1971; Tinto, 1975) all include background variables that are considered to affect students' interaction with social and academic variables in instructional settings. Previous models also treat student attrition as a longitudinal process. A relatively extensive range of environmental variables are also incorporated into the model. The importance of environmental factors on nontraditional student attrition has been emphasized by other researchers (see Bean & Metzner, 1985; Fox, 1986; Weidman & White, 1985). The interactions of organizational factors such as school policies, availability of support services, instructional supports, and courses offered on nontraditional student dropout behavior are also included as a major theme in this model.

The following discussion explores the rationale and supporting research for variables included in the model. These variables, however, should be viewed as tentative determinations, intended only to represent an initial conceptualization of a model of nontraditional student attrition and retention in postsecondary vocational education. A

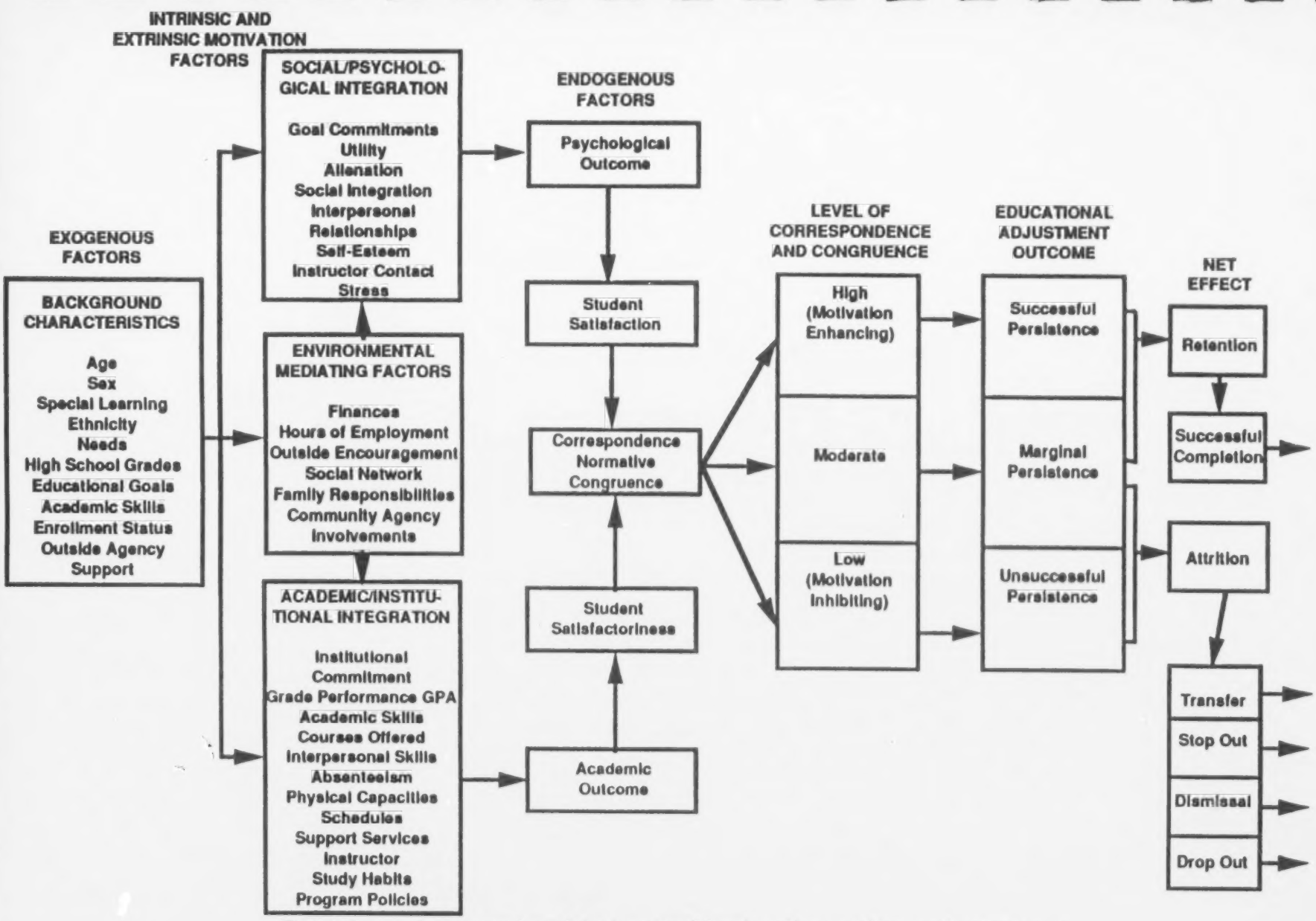

Figure 6 A proposed model of nontraditional student attrition and retention in postsecondary vocational education.

future test of the model is needed to verify the importance and statistical quality of the variables initially selected.

BACKGROUND CHARACTERISTICS

Background characteristics tend to represent commonly collected information describing the personal attributes and characteristics of students, including their past academic, social, and family experiences. The following describes selected background characteristics contained in the model.

Age

Age is a variable of interest in many studies of student attrition and retention. Bean and Metzner (1985) in a review and synthesis of over forty postsecondary dropout studies, concluded that age per se does not represent a major factor, although such correlates of student's age as family responsibility and hours of employment may be significantly associated with attrition. Within recent years, demographic trends show that the average age of students participating in postsecondary educational programs is increasing. In Minnesota, for example, the mean age of postsecondary vocational education students is twenty-seven, while overall age range of students extends from early adolescence through late adulthood. Older students presently represent an important and sizable number of postsecondary vocational participants.

In the present model, the indirect effects of age on attrition are expected to vary between younger and older students. Older students, for example, typically have additional family responsibilities, may be more inclined to seek part-time instead of full-time enrollment, and often work more hours outside of school (Boshier, 1973; Cross, 1981; Weidman & White, 1985). Younger students, on the other hand, may have fewer financial and family responsibilities, but may be more involved in outside friendship networks (e.g., dating or socializing), more dependent on family and friends for outside encouragement, and less financially independent than older students. For both younger and older students, these related factors may restrain overall levels of educational adjustment and be negatively associated with persistence.

Gender

In the proposed model, gender is likely to have an indirect effect on female attrition due to outside family responsibilities, socioeconomic factors (i.e., single heads of household, AFDC recipients), and other factors. For males, attrition is more likely to be affected by grade performance and other academic criteria.

Despite significant gains by women in both college entry and completion rates, evidence from a variety of sources continues to suggest that women's experiences in postsecondary education are somewhat different from those of men (Astin, 1975; Gosman et al., 1983). Pascarella and Terenzini (1983) contend, for example, that women's departures, relative to those of men, are influenced more heavily by social forces than by academic factors.

In addition, women are influenced more by forms of social integration than by academic ones. Studies by Bean (1980), Pascarella and Terenzini (1983), and Tinto (1975) have shown that women, as a group, are more likely to depart voluntarily than are men; whereas men are more likely to stay in college until forced to leave for academic reasons. Bean and Metzner (1985) note that because men and women still have distinctive (i.e., stereotypical) roles outside of college, it is important to include gender in models of student attrition.

Race

A number of studies have established the need to consider race as an intervening variable in student dropout and retention research. For example, studies have supported the contention that attrition among disadvantaged Blacks results primarily from differences between Black and Caucasian students' performances related to academic criteria (Eddins, 1982; Gosman et al., 1983; Shaffer, 1973). When academic achievement is controlled for statistically, Black students have shown greater degrees of persistence than Caucasian students in several studies (Astin, 1972; Peng & Fetters, 1978). Overall, the National Longitudinal Study of the High School Class of 1972 as summarized by Tinto (1987) and Eckland and Henderson (1981) indicates that persons from minority groups typically experience higher dropout rates from postsecondary education programs. Based on previous studies, the indirect effects of race on student attrition may be due to factors

associated with grade performance, overall grade point average, and other academic attainment measures. This argument is based on the tendency for minority students to experience lower quality education programs during their formative years. Further, the indirect effects of race on attrition are more subtly related to the students' level of institutional commitment, perceived utility of the program in future career outcomes, alienation, and relationships with other students and instructors.

Enrollment Status

Within the context of the model, enrollment status distinguishes part-time from full-time students. Nontraditional students who are older and/or have added family and work responsibilities may be among those who seek part-time enrollment. In an extensive review of dropout literature, Lenning, Beal, and Sauer (1980) found a significant relationship between part-time and full-time enrollment and its indirect effect on student attrition rates. Several studies, for example, concluded that student attrition rates are much higher among students enrolled part-time in two- and four-year postsecondary education programs (Alfred, 1973; Brunner, Packwood, & Wilson, 1978; Fetters, 1977; Knoell, 1976; Martin, 1974; Smith, 1980). Other studies have shown that older students are more likely to seek part-time study (Rauch, 1981; Solomon & Gordon, 1981). Postsecondary vocational training is increasingly being recognized as an essential means by which young (typically female) single heads-of-households with primary child care responsibilities can achieve economic independence. Outside family responsibilities and the limited financial resources may require these youngsters to enroll only on a part-time basis.

In the model, the indirect effects of student enrollment status on attrition is of interest because of the significant number of nontraditional students who seek part-time versus full-time enrollment. Enrollment status is postulated to be a variable associated with student attrition in postsecondary vocational education settings.

Special Learning Needs and Characteristics

Students with special learning needs are typically classified into two groups: academically disadvantaged or persons with disabilities. Very few studies have focused on the experiences of students with special learning needs in postsecondary education

programs. Adults with special learning needs, however, do represent a growing proportion of students in postsecondary vocational education programs. Many of these individuals encounter difficulties in training programs due to a range of academic, social, emotional, and/or physical limitations. Studies show, however, that community colleges and postsecondary vocational education programs can and do provide meaningful education for many of these adults (see Baxter, 1972; Brown & Kayser, 1982; Caparosa, 1986; Jones & Moe, 1980; Kayser, 1984; McAfee & Sheeler, 1987; Moss, 1979; Wood, Meyer, & Grady, 1977). State-by-state data on the number of these persons who fail to successfully complete their vocational education programs are simply not collected.

Fox (1986) and Weidman & White (1985) investigated attrition rates among students classified as disadvantaged in postsecondary vocational education programs. However, neither researcher examined the interaction effect of economic and/or educational disadvantagement with other institutional variables such as level of remedial assistance, tutoring, and other support services used by students in attempting to account for student attrition rates. Thus far, studies have been limited in their explanation of the dropout phenomenon among adults with special learning needs.

The proposed model acknowledges groups of persons characterized or labeled as disabled/handicapped and academically and/or economically disadvantaged. It is assumed that these students may experience inflated rates of attrition due to academic, social, emotional, and/or physical limitations.

Outside Agency Support

Students termed disabled or disadvantaged tend to receive outside support from community service agencies. Adults with disabilities, for example, may receive services from vocational rehabilitation, county social services, medical clinics, and other agencies while attending postsecondary vocational education training programs. These agencies help defray costs of tuition, special tools, equipment, books, classroom equipment adaptations, and transportation. The agencies also provide counseling services. Disadvantaged students may be involved with such other types of community service agencies as welfare programs, subsidized community child care services, medical clinics, and therapeutic counseling programs (e.g., chemical dependency units, mental health clinics). These services help to maintain outside personal and family stability while

educational goals are pursued. Studies on postsecondary student attrition to date have not included outside agency support as a variable of interest.

When students are dependent on outside community agency support to pursue educational goals, documenting the type and level of support received is important. Lack of support from essential community agencies may negatively affect student persistence levels.

Family Background

The variable, family background, is included in the model as a descriptive measure of family histories and relationships. Spady (1971) identified "family relationships" as a contributing factor to student attrition in postsecondary education programs. Family relationships refer to the quality of interpersonal relationships within the family and to the nature of tension, stability, supervision, and support that the student experiences within his or her home. It has generally been found that students coming from stable, supportive family environments are less likely to drop out of postsecondary education programs. Several earlier studies examined the quality of family relationships on student attrition within postsecondary education programs. For example, Weigand (1957) found that poor achievers came from family situations characterized by greater tension, disturbance, and more stringent parental discipline.

Another important indicator of student persistence in higher education settings is the parents' level of formal education (Cope & Hannah, 1975; Skaling, 1971; Spady, 1970; Tinto, 1975). Parents' educational attainment levels also have a direct and positive impact on SES (socioeconomic status): the higher the education level, the higher the family income levels tend to be. The SES of students and their families is an often cited variable associated with students' tendencies to withdraw prematurely from their postsecondary education programs (Aiken, 1968; Astin, 1972; Fetters, 1977; Smith, 1980; Weigel, 1969).

High School Grades and Academic Ability

Bean and Metzner (1985) in their review of dropout studies consistently found previous high school academic performance as one of the strongest pre-enrollment predictors of persistence of students in postsecondary education. Tinto (1975), in fact, reports that high school grade averages and high school class rank are stronger predictors of persistence than scores on tests of academic ability. Staman (1980) also found that high school grade average discriminated between dropouts and persisters who were older students, ages twenty-two to forty-five. Overall, high school grade average, high school class rank, and tests of academic ability are consistently reported as positively associated with student persistence in four-year institutions (Astin, 1972; Mattox, 1984; Pascarella & Chapman, 1983; Pascarella et al., 1983; Peng & Fetters, 1978; Staman, 1980) and two-year programs (Astin, 1972; Eagle, 1979; Peng & Fetters, 1978).

In the proposed model, high school grades and academic ability are postulated to be positively associated with grade performance and GPA within the postsecondary setting.

Educational Goals

Within the context of the present model, the concept of educational goals refers to students' initial values, interests, and motivations which justify their participation in postsecondary education programs. Lenning et al. (1980), Spady (1970), and Tinto (1975) argue that students' initial goals may contain motivational influences that affect persistence in postsecondary education programs. Educational goals may include (1) students' plans to pursue full programs of studies resulting in degrees or certificates of completion, (2) students' intentions to take only a few select courses for job enrichment or job advancement, (3) students' intentions to pursue particular programs of study that are viewed within vocational interests and motivations, and (4) the nature and extent of students' commitments to efforts to successfully complete their programs. Tinto (1975) further explains that, whether measured in terms of educational plans, educational goals, or career expectations, the higher the level of plans, the more likely it is that individuals will remain in college.

Several other researchers (Bucklin & Bucklin, 1970; Coker, 1968) found that the level of educational plans held by individuals is by far the strongest independent influence

upon college completion, once family social status and ability were taken into account. Spady (1970) also demonstrated that individuals' expectations for their future occupation was, after ability, the single most important predictor of actual attainment.

Educational goals represent a factor directly related to Tinto's (1975) concept of goal commitment described earlier in this paper. Furthermore, educational goals should have an indirect effect on attrition through goal commitments, utility, psychological outcome, and student satisfaction levels.

ENVIRONMENTAL MEDIATING FACTORS

Environmental factors are conditions and influences occurring at the time of one's postsecondary experience postulated to affect student attrition and retention. These factors, typically outside the control of postsecondary education programs, occur within the community, family, and social contexts of the student. The model includes several primary environmental variables. These environmental variables are derived from the findings and interpretations of other researchers on student attrition and retention in postsecondary education programs. These include (1) the availability of adequate finances to support the costs of postsecondary education programs, (2) the number of hours employed outside of educational programs, (3) outside encouragement by family and peers, (4) students' friendship networks within their communities, (5) students' family responsibilities, and (6) the continuation of community agency support during students' postsecondary education programs. These environmental factors are viewed as mediating variables affecting both students' psychological and academic outcomes and decisions to drop out.

Finances

Adequate financial resources are a prerequisite to participation in postsecondary training programs. Bean and Metzner (1985) comment that in the dropout literature, ability to finance college educations has been measured by various indicators: parents' SES; students' or parents' income; and students' perception about their finances (e.g., financial problems, inadequate finances, degree of financial concern, extent of certainty about finances). Inadequate finances are often cited as a reason for decisions to drop out of

school. Several recent studies on student attrition included finances as an extraneous variable that influences student attrition levels (Bean, 1985; Bean & Metzner, 1985; Fox, 1986; Garrison, 1985; Weidman & White, 1985). These and earlier researchers (Astin, 1972; Fetters, 1977; Louis, Colten, & Demeke, 1984; Smith, 1980; Staman, 1980) all found a direct relationship between financial difficulties and attrition from academic institutions. The question of adequate finances among nontraditional students may be a significant concern.

Students classified as disabled or disadvantaged often represent the lowest SES levels in the community. These individuals tend to depend upon outside community agency or family support for tuition, transportation, child care, and other personal and family needs.

In the model, the indirect effect of finances on attrition is expected to occur primarily through its influence on student stress, institutional commitment, and program policies related to financial aid.

Hours of Employment

Many full-time and part-time students find it necessary to maintain outside employment while pursuing education. This is not uncommon in today's academic world. However, the total hours of outside employment may directly affect student attrition and persistence. A number of studies have examined the relationship between student persistence and total hours employed (Astin, 1972, 1975; Bean, 1985; Bean & Metzner, 1985; Peng & Fetters, 1978; Smith, 1980; Staman, 1980). Student advisors typically recommend that full-time students work fewer than twenty hours per week. Bean and Metzner (1985) found in their review of dropout studies that researchers commonly agree that employment in excess of twenty to twenty-five hours per week negatively relates to student persistence. However, Staman's (1980) research at a four-year commuter-oriented institution indicated that, although the number of employment hours per week was strongly and negatively related to the persistence of continuing students under age twenty-two, it showed no significant association for older students. Overall, most studies on student attrition and persistence suggest that when students work in excess of twenty to twenty-five hours per week, there is a negative effect on successful program completion.

In the proposed model, hours of employment are felt to indirectly affect students' levels of stress, grade performance, absenteeism, and institutional policies.

Outside Encouragement

Outside encouragement is defined as the extent of support and encouragement provided to students by family, close friends, peers, and associates. Earlier studies of student attrition and persistence (Pascarella & Terenzini, 1977; Rootman, 1972; Spady, 1970, 1971; Tinto, 1975) analyzed encouragement from the perspective of institutional social integration. That is, institutions themselves act as primary socializing agents to enhance students' persistence. As researchers began to focus on nonresidential, commuter-oriented institutions, more attention was directed to environmental factors that would influence student persistence.

Outside encouragement as a variable of interest in dropout studies has been examined from several perspectives. Support from immediate families (parents) is often cited as positively related to student persistence (Hackman & Dysinger, 1970; MacMillann, 1969; Slocum, 1956; Trent & Medsker, 1968; Weigel, 1969). Hughes (1983), Roach (1976), and Starr, Betz, and Menne (1972) have associated satisfaction levels among older students with positive family reaction to academic involvement. The support of close friends and other peers outside of the academic environment is also negatively associated with students' intent to drop out (Anderson, 1981; Bean & Metzner, 1985; Metzner, 1984). In addition, Bean and Metzner (1985) argued that it is outside encouragement that replaces normative institutional support (creating conditions for social integration) in the models of Spady (1971) and Tinto (1975).

In the present model, outside encouragement is viewed as a stronger socializing influence on students than the social world of the institution itself. This does not mean that postsecondary vocational education environments are void of encouragement and support, but, rather, that students are more inclined to value outside encouragement first.

Social Network

It was noted earlier that outside encouragement from close friends and peers tends to foster student persistence. All of the models discussed thus far emphasize the importance of either the socializing effects of the academic environment itself (social integration) or the value of encouragement and support from environments external to schools in promoting students' persistence. It must be recognized that some nontraditional students, however, may have difficulties in developing and maintaining social friendship networks either within the postsecondary environment or the community. This is a particular problem for youth and adults with disabilities. For example, several studies have documented substantial levels of social isolation among persons with disabilities in community settings (Hill & Bruininks, 1981; Katz & Yekutiel, 1974; Reiter & Levi, 1980; Thurlow, Bruininks, & Lange, 1989). While communities represent researchers' primary context for analyzing social relationship patterns among persons with disabilities, other researchers have examined social networks from the perspective of formal organizations such as work and school (Burt & Minor, 1983; McCallister & Fischer, 1983).

Academically and economically disadvantaged individuals also experience degrees of social isolation within communities due to a range of factors. Extensive family responsibilities, limited finances, working long hours outside of school, and other factors tend to inhibit social contacts. Failure to develop or have available adequate social support networks within communities or postsecondary education settings may negatively affect student persistence. According to Anderson (1981), peer attitudes can influence integration within postsecondary education programs, as well as enhance academic achievement and overall persistence. Anderson also suggested that peer discouragement of such alternatives as employment or vocational training was positively related to student persistence. Other studies have shown that relationships with instructors outside of class, student evaluation of the quality of these experiences, satisfaction with their social life or social opportunities, friendships, informal or casual relationships, and mentoring have a positive relationship on student persistence (Bean, 1986; Bean & Metzner, 1985; Lenning et al., 1980; Nelson, Scott, & Bryan, 1984; Pascarella & Chapman, 1983; Pascarella & Terenzini, 1980; Spady, 1970, 1971; Tinto, 1975).

In the proposed model, social networks appear as an environmental mediating variable to provide a descriptive insight on the extent to which the quality of students' social contacts influence dropout decisions in postsecondary vocational training programs.

Family Responsibilities

The impact of family responsibilities on student attrition and persistence is becoming an increasingly more important area of concern among researchers (Bean & Metzner, 1985; Clark, 1986; Darkenwald, 1981; Fox, 1986; Hunter & Sheldon, 1980; Weidman & White, 1985). Family responsibilities include primary child care duties, household management, marital relationships, and numerous other factors. Several researchers found a negative relationship between family responsibilities and student persistence, drawing particular attention to child care responsibilities. For example, Hunter and Sheldon (1980) found that family pressures and responsibilities are the primary reasons for dropping out by students in community college settings. Bean and Metzner (1985), in their review of the following dropout research, found that (1) family responsibilities represent one of the most prevalently cited reasons for attrition of older and part-time students (Carter, 1982); (2) number of children was negatively associated with persistence for students aged twenty-two or older, but showed no significant effect for younger students (Staman, 1980); (3) older female students who were married and had at least one child living at home reported significantly greater stress from family obligations than persisters (Berkove, 1976); and (4) older female students who failed to accomplish their original educational goals in community college programs had a significantly greater number of children living at home than students who had attained their goals (Reehling, 1980).

While researchers have not extensively investigated family responsibilities and student persistence, evidence shows that family responsibilities constitute a significant barrier to some students' participation and overall persistence. Economically disadvantaged participants in postsecondary education programs—especially young, unemployed women who are primary care givers and often single heads of household—are likely to be the most affected by outside family responsibilities. Family responsibilities are also associated with other variables in the model, particularly the unavailability of finances and stress levels experienced by the student.

Community Agency Involvements

As noted earlier, students with disabilities and students with academic or economic disadvantages often depend upon community agency support to attend postsecondary

educational programs. No studies were found that examined the relationship of student involvement with outside and community agencies and persistence.

The proposed model assumes that loss of support, particularly from agencies providing financial resources to the student for tuition, child care, transportation, and daily living needs, contributes significantly to student attrition. It is argued that it is important to document the type(s) and level of community agency assistance students receive, and how this assistance differs among dropouts versus persisters. While not yet supported by other research studies on student attrition, community agency involvements are included in the present model as a variable for descriptive purposes.

ACADEMIC/INSTITUTIONAL INTEGRATION

Academic integration is a concept repeatedly used in models of student attrition (see Pascarella & Chapman, 1983; Pascarella et al., 1983; Pascarella & Terenzini, 1977; Spady, 1971; Tinto, 1975). Academic integration is defined as the interactive influences of such factors as students' grade performance, grade point average, intellectual development, quality of instructional staff, and institutional commitment on attrition. Institutional integration is included in the present model to identify and account for specific institutional influences and factors that promote or inhibit students' persistence. Institutional integration variables include administrative policies (e.g., admissions, financial aid, attendance, support services); type and availability of courses, support services (e.g., assessment, counseling, advising, tutoring); quality of the facilities; and perceived adequacy of instructors. Combined, these academic and institutional variables are expected to have indirect effects on dropout levels through institutional commitment, grade performance, and academic outcome, reflected in levels of student satisfactoriness; through psychological outcome variables, especially student satisfaction; and through the degree of correspondence between student satisfaction and satisfactoriness on overall educational adjustment (persistence).

In earlier models, Spady (1970, 1971) and Tinto (1975) argued that academic integration can be measured in terms of both grade performance and intellectual development during the college years. Tinto (1975) further defines these terms by noting that, although both contain structural and normative components, the former relates more

directly to the meeting of the explicit standards of the academic system, and intellectual development pertains more to individuals' identification with the norms of the academic system. As pointed out by Spady (1970), intellectual development is viewed as an intrinsic form of reward, integral to students' personal and academic development. Grades, on the other hand, tend to be the most visible form of reward in the academic system and represent an extrinsic reward of participation in that environment.

These premises are applied to the proposed model, and are consistent with other models presenting educational adjustment constructs (Brown & Kayser, 1982; Kayser, 1984). The notion, for example, that students must perceive academic systems as being rewarding (satisfaction) and that these systems must routinely evaluate students' performance on a range of given measures (satisfactoriness) are commonly addressed concepts and themes in studies of student attrition and persistence.

In these dropout studies, academic integration was perceived to result from acceptable grade performance. Bean (1985), however, argues that academic integration is a precursor rather than the result of grades. For example, in Bean's model, grades are assumed to be due to good study habits, low absenteeism rates, and so forth, rather than causing them. Contrary to Tinto's (1975) model, Bean postulates that grades, in and of themselves, do not represent integration into the academic value system of college environments. In the proposed model, academic integration is viewed as an antecedent to grade performance. That is, students must possess adequate levels of academic potential such as academic skills, intellectual capabilities, interpersonal skills, good study skills, and good work habits to perform adequately within academic environments. Grade performance and grade point average are academic outcomes: an evaluation of skills, abilities, and attributes in relation to the system's values and objectives established for academic attainment and achievement.

Institutional integration is also necessary for grade performance. From the point of enrollment, students must interact with the academic institution and its requirements for participation. This issue addresses an often neglected area in student dropout research, namely the institution's responsibility in accommodating students' special learning needs, supporting their financial needs, and assisting them in overcoming other barriers to participation in training programs.

This means that students must successfully assimilate and meet the institutions' administrative policies and course requirements. They must also establish positive relationships with instructors and other students. Of interest in the proposed model is the level of responsiveness postsecondary institutions must convey in aiding students to adjust and successfully assimilate into the academic environment.

SOCIAL/PSYCHOLOGICAL INTEGRATION

In the proposed model, social/psychological integration refers to the scope and quality of the students' interaction and experiences with the social system of the postsecondary environment (Bean & Metzner, 1985). This also includes the amount of personal importance and utility that students associate with obtaining postsecondary education services, and the extent to which students experience stress, feelings of alienation, and/or negative or positive influences on their self-esteem from their involvement in postsecondary institutions. These factors are constantly appraised and valued by students during their training experiences. The concept of student satisfaction is used to explain the overall effect of these factors on psychological outcomes. Previous models have assumed that students who have extensive, high quality interactions with persons in this social system (i.e., greater social integration) are more likely to continue to be enrolled in college (Spady, 1971; Tinto, 1975).

Several researchers have investigated the impact of interpersonal relationships with peers and instructors on student persistence. For example, peer support in collegiate social systems has been shown to be associated with persistence (Cope, 1978; Cope & Hannah, 1975; Cope & Hewitt, 1971; Jones, 1962; Rootman, 1972; Spady, 1971). It is generally assumed that most individuals interacting within a social system seek out formal and informal relationships within their educational institutions. Bean (1985) argues that feeling one does not fit in produces cognitive dissonance (see Festinger, 1957), which may provide the initiative to withdraw. He further comments that the perceived utility of one's education, faculty contacts, and social life all should increase one's sense of fit, while alienation should reduce fit.

The social systems of academic settings also include instructors, support service staff, and administrative personnel. A number of studies have found a positive relationship

between the quality of faculty contact and student persistence (Kayser, 1984; Pascarella & Terenzini, 1977; Spady, 1971; Tinto, 1975). Spady (1971) suggests that the positive correlation between faculty contact and student persistence arises from the fact that students' interaction with faculty not only increases social integration, but also increases individuals' academic integration. In other words, as institutional and faculty modes of student evaluation, grades are not totally objective measures of student ability and are not randomly distributed among differing persons of supposedly similar ability in institutional settings. Interpersonal relationships, instructor contacts, and their effects on student persistence appear as prominent themes in most studies. The quality of these contacts are viewed as having an indirect effect on students' feelings of self-esteem, alienation, and stress, and have a direct effect on psychological outcomes and students' satisfaction levels. Social/psychological integration is also viewed as being affected by students' goal commitments and perceived utility of their academic programs in terms of their future employment and personal development goals. Goal commitment refers to the amount of personal importance students associate with attaining postsecondary educations, typically defined as the importance of graduating from college after students have gained some experience in college environments (Bean & Metzner, 1985). In the proposed model, educational goals (see previous discussion on background characteristics) represent prematriculation expressions of the importance individuals associate with their intent to enter postsecondary education programs and to pursue particular occupational courses of study. Goal commitment, in turn, is a postmatriculation measure of the individuals sustained valuation of their pursuit of educational goals. It is assumed that positive levels of pre- and postmatriculation goal commitments are also associated with students' persistence. Several studies have supported this positive association between pre- and postmatriculation goal commitment and student persistence (Hackman & Dysinger, 1970; Pascarella & Chapman, 1983; Pascarella & Terenzini, 1980, 1983; Spady, 1970; Tata, 1981; Tinto, 1975).

In postsecondary vocational education programs, the determination of prematriculation educational goals is a function of student advising processes. Vocational preferences (identified by assessment services or directly expressed by students), academic abilities, and/or perceived interest in the development of specific job-related skills are typically used to select students' courses of study. The closer the relationship between occupational program choice and the expressed and tested vocational preferences and academic potential of students, the higher the level of personal satisfaction that is likely to

be derived. Cope and Hannah (1975) and Lenning et al. (1980) found that students' lack of interest in their courses was negatively related to persistence in postsecondary education programs. Postmatriculation goal commitment, then, is indirectly affected by prematriculation educational goals, perceived usefulness (utility) of academic programs in terms of future employment and personal goals, as well as other personal and interpersonal experiences during training.

Student perceptions of the usefulness (utility) of postsecondary education programs for future employment and personal development have also evolved as a variable of interest among researchers. Several studies, for example, have found that career development is reported as the primary reason among older and other nontraditional students for their efforts to pursue additional education (Chickering, 1974; Solomon & Gordon, 1981). Bean (1980, 1982) found that the practical value of courses was considered to be the third or fourth most valuable of ten to fourteen variables in terms of total effect on dropouts in postsecondary education settings.

Students' self-reports of stress, self-esteem levels, and feelings of alienation (dissonance) toward schools have also emerged as an area of interest in studies of student attrition. As discussed previously, environmental stress may be associated with child care responsibility, marital strife, family illness, conflicts with peers and relatives, and outside employment demands. Environmentally based stress may be negatively associated with persistence, especially among older and other nontraditional students (Bean & Metzner, 1985; Carter, 1982; Metzner, 1984; Smith, 1980).

Stress may also be experienced by individuals while attending school. Institutionally induced stress is typically related to the total number of credits during a given academic semester or quarter, the rigor and academic requirements of certain courses, relationships with instructors, and relationships with peers (Hall, 1975; Louis et al., 1984). These factors may also be negatively associated with student persistence. Lowered self-esteem due to poor grade performance, interpersonal difficulties, and other factors can also contribute to student attrition. Bean (1985) stressed his belief that students who feel they fit into social and academic environments are likely to value this, and thus continue their educational activities. He also suggested that feeling one does not fit in produces cognitive dissonance, which may become grounds for withdrawal. Thus, when low self-esteem levels are experienced and students feel that they do not fit in, feelings of alienation may result. This psychological state is also negatively correlated with student persistence.

In the present model, stress, self-esteem, and alienation are felt to indirectly affect psychological outcomes and students' overall satisfaction levels.

ENDOGENOUS FACTORS

Academic Outcome and Student Satisfactoriness

Academic outcome is defined and expressed by two variables: grade performance and GPA. Student satisfactoriness is an indicator of performance, provided by sources other than the student, typically their instructors, and is directly related to the appraisal of students' abilities to fulfill the academic requirements of educational environments. In essence, student satisfactoriness is the organizations' assessment of individuals. Individuals are commonly evaluated by institutional representatives in terms of how well they meet the organizations' "needs" on a variety of other criteria. Bean and Metzner (1985) report that college academic performance has been a consistent and powerful predictor of student persistence.

The relationship of grade performance and GPA on student attrition is, therefore, expected to be direct. Tinto (1975) notes that, with respect to grade performance, many studies have shown it to be the single most important factor in predicting persistence in college. Receiving poor grades may also indirectly negatively affect students' educational and institutional commitments and it is anticipated that attrition rates will tend to be higher among these individuals.

Psychological Outcome and Student Satisfaction

In the present model, psychological outcomes include student goal commitments; perceived utility and practical value of their training program; degree of social integration achieved through interpersonal relationships and instructor contacts; and students' feelings of stress, self-esteem, and alienation toward their programs and their participation in those programs. Ultimately, psychological outcomes are expected to produce either high, moderate, or low levels of student satisfaction. Lofquist and Dawis (1969) have conducted extensive research on the concepts of work adjustment and job tenure based on measures of satisfaction and satisfactoriness. According to these researchers, satisfaction is a basic

indicator of the degree of success that individuals have achieved in maintaining correspondence between themselves and their environments.

In the present model, high to low levels of student satisfaction have a direct effect on persistence and attrition.

LEVEL OF CORRESPONDENCE AND CONGRUENCE

In the present model, the degree of correspondence (normative congruence) between student satisfaction and satisfactoriness directly affects educational adjustment and student withdrawal or persistence behavior. Hackman and Dysinger (1970) discuss the concept of correspondence in relation to student decisions to withdraw or remain in school. These researchers found that (1) students with solid academic competence, but moderately low levels of commitment to college completion tended to withdraw voluntarily from college, and often transferred to other institutions or re-enrolled at a later date (i.e., stopout); (2) students with poor academic qualifications, but moderately high commitments tended to persist in college until completion or until forced to withdraw for academic reasons (i.e., academic dismissals); and (3) students with both low commitment to college completion and moderately low academic competence tended to withdraw from college and not transfer to another institution or to re-enroll later (i.e., permanent dropout). Lack of skills, lack of rewards or reinforcers, or a combination of these two factors encourages student departure (Kayser, 1984). Lofquist and Dawis (1969) hypothesized that when individuals are able to achieve some minimal level of correspondence, they tend to stay in those environments and, as a result, will increase their potential for developing optimal correspondence with those environments. Brown and Kayser (1982) and Kayser (1984) have also applied this construct in their model of educational adjustment and student persistence in postsecondary vocational educational environments.

The concepts of correspondence and normative congruence are primary theoretical premises applied in the proposed model.

EDUCATIONAL ADJUSTMENT OUTCOME AND NET EFFECT

It is postulated that educational adjustment results in three plausible outcomes: (1) successful persistence, (2) marginal persistence, and (3) unsuccessful persistence. Brown and Kayser (1982) and Kayser (1984) used a similar schema to explain educational adjustment. It, therefore, seems likely that individuals who experience high satisfaction and high satisfactoriness can be assumed to be the most well adjusted and the most likely to be successful persisters. This situation also produces the most optimal motivation-enhancing situation for students, in which both intrinsic and extrinsic rewards are acting positively on individuals. Students experiencing high satisfaction, but low satisfactoriness, or low satisfaction but high satisfactoriness, are regarded as marginal persisters. In this paradigm, students who are highly motivated and satisfied with their academic environment, but who experience low grade performance, may ultimately persist and successfully complete their programs. Conversely, students with high academic performance (satisfactoriness), but who have low levels of satisfaction, may also persist. However, when both satisfaction and satisfactoriness are low, persistence is likely to prove difficult to maintain. Thus, when correspondence yields low satisfaction and low satisfactoriness, students are more likely to drop out or to be terminated.

SUMMARY

To date, few studies have been conducted on nontraditional student attrition in postsecondary vocational educational programs. By necessity, the proposed model is adapted from other conceptual and theoretical approaches found in studies conducted in two- and four-year postsecondary institutions. The model also draws upon the previous research on traditional students (Bean, 1980, 1982; Pascarella et al., 1983; Pascarella & Terenzini, 1977; Spady, 1970, 1971; Tinto, 1975), as well as studies that focus on nontraditional students (Bean & Metzner, 1985; Brown & Kayser, 1982; Fox, 1986; Kayser, 1984; Weidman & White, 1985). Selected concepts and variables from these previous studies are reviewed in the discussion of literature and applied in formulating the present model to explain a process of student attrition in postsecondary vocational education settings.

The proposed model includes several new variables not found within previous research studies on student attrition and persistence. First, the model is developed to potentially account for attrition among different subgroups of nontraditional students (i.e., adults with disabilities, academically and economically disadvantaged students). Exogenous factors describing students' backgrounds include such variables as special learning needs (disability) and outside community agency support received. The inclusion of disability as a variable of interest in investigating student dropout behavior is unique. Developing an improved professional understanding of why youth and adults with disabilities drop out, and what factors mitigate this attrition or persistence is critical as efforts to provide increased access to these individuals in postsecondary vocational education continue. The present model also seeks to examine the interrelationships of disability and disadvantagement to a range of outside environmental factors such as personal finances, family and friend relationships, community agency involvement, and other environmental variables potentially affecting students' dropout behavior.

Of further interest is the expansion of several concepts described and tested in other models of student attrition and persistence in postsecondary education. "Institutional commitment" and "social integration," in particular, must take on new meanings in postsecondary education dropout studies that include subgroups of students termed disabled and academically and/or economically disadvantaged. For example, in previous studies, institutional commitment was defined as the students' level of personal commitment to the postsecondary institutions as demonstrated by grade performance. Of equal importance is the type and level of commitment that postsecondary education programs must demonstrate to their students. For young people and adults with special learning needs and academic and/or economic limitations, postsecondary programs must become increasingly more responsive to their needs. Institutional responsiveness can and should be investigated from the perspective of the postsecondary education program's willingness and capacity to create a positive and supportive environment for student learning. This means establishing supportive administrative and program policies, offering appropriate student support services, making reasonable accommodations for students with special learning needs, and assisting students with other special needs and requirements essential to their successful participation. It is argued that these types of student support play a significant role in students' decisions to drop out or persist.

Social integration, the extent to which students assimilate into the social and cultural fabric of the organization itself, needs further delineation. Postsecondary programs across the nation are experiencing increased cultural and ethnic diversity in student enrollments. Postsecondary education programs must become more sensitive to this rising diversity. Feelings of alienation, stress, isolation, and loneliness are commonly associated with decisions to drop out. Creating a positive institutional climate for student participation is central to the application of the concept of social integration in the proposed model. That is, a student's interaction with instructors, support staff, and other students must be positive, at least from the perspective of creating a social atmosphere in which students feel a sense of belonging and security and are appreciated as individuals by those interacting with them within the institutions. It is argued that feelings of alienation, dissonance, isolation, and loneliness may be more associated with nontraditional students' dropout decisions than found in earlier studies on postsecondary education programs. The proposed model includes the construct of social integration, however, and broadens these general concepts to include other attitudinal variables associated with the student's overall social/psychological adjustment (integration) within postsecondary education settings.

This literature review has attempted to identify and discuss key concepts, theoretical perspectives, and variables applied in previous research studies on student attrition in postsecondary education programs. Understandings gained from these earlier studies were then used in formulating a conceptual model of nontraditional student attrition and persistence in postsecondary vocational education programs. The present model is a tentative one that requires an empirical test in order to demonstrate its validity and practical and conceptual utility in adequately explaining nontraditional student attrition and persistence in postsecondary vocational education settings. Interrelationships among the variables selected in the model must be subjected to analysis and discarded, modified, or retained for their meaning and value in explaining the processes of student attrition and persistence.

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